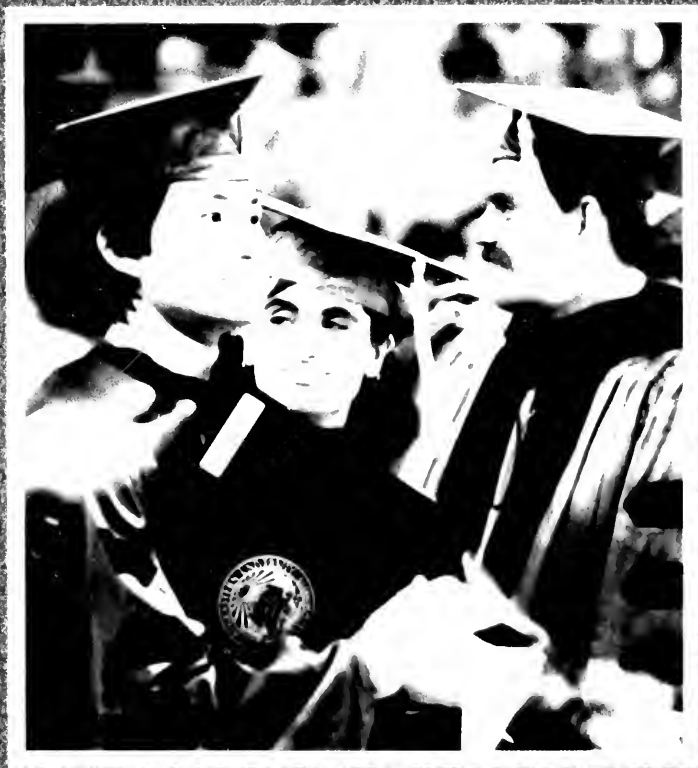


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Graduate Programs



Northeastern University

Boston, Massachusetts

Graduate School of Arts and Sciences

Northeastern University

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Boston, Massachusetts 02115*

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Introduction to Northeastern University



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Message from the President

Northeastern University, located in the heart of Boston, is an exciting, vibrant place to pursue graduate studies. I am proud and delighted to introduce the University to you.

Northeastern offers students a full complement of graduate programs in an environment oriented to both scholarship and practical skills. Under the guidance of a distinguished faculty of scholars and researchers, the University's graduate and professional schools have designed each program to meet the academic and career needs of its students. The programs are also tailored to be responsive to the professional climate of the 1990s and are widely recognized to be on the leading edge of technological and theoretical developments in their respective fields.

Each year I have the pleasure of welcoming eager graduate scholars from around the nation and the world to the University. I look forward to greeting you should you decide that Northeastern University's programs suit your academic and career aspirations.

John A. Curry
President



About Northeastern University

Among the nation's largest private universities, Northeastern University distinguishes itself not only by its immutable dedication to excellence in research and study, but also by its dedication to discovering community educational needs and meeting them. The University has not attempted to duplicate the programs of other institutions, but has sought to pioneer new areas of educational service from its beginning in 1898.

Northeastern University's roots can be found in the "Evening Institute for Young Men" founded in Boston in 1898. Classes in Law were offered at a reasonable cost during the evening for those who worked during the day. The first evening law school in Boston quickly expanded to include other disciplines, and soon added an innovative daytime program which offered opportunities to "earn while you learn." By the time Northeastern was incorporated as a university in 1922, the school had committed itself to "cooperative education by day, adult education in the evening."

Over a half century later, Northeastern University has become a large comprehensive university with eight undergraduate colleges, nine graduate and professional schools, numerous suburban campuses, and an extensive research division. Incorporated as a privately endowed, nonsectarian institution of higher learning under the General Laws of Massachusetts, Northeastern, like other private universities, is governed by a Board of Trustees, elected by and from the Northeastern University Corporation, which is composed of about 200 distinguished business and professional men and women across the country. The Board of Overseers, chosen from the membership of the Corporation, based on their exceptional interest in and support of the University, is also a participant in the affairs of the institution.

Northeastern University has developed a national reputation as the leader in cooperative education. The Cooperative Plan of Education, initiated by the College of Engineering in 1909 and subsequently adopted by the other colleges of the University, enables students to alternate periods of work and study. This educational

alternate periods of work and study. This educational method offers students an opportunity to gain valuable practical experience as an integral part of their education and also provides the means by which they may contribute substantially to the financing of their education. Begun at the full-time undergraduate level, the Plan has been extended to the graduate level in engineering, business administration, law, professional accounting, and criminal justice.

In the field of education, the University offers full and part-time graduate degree programs that are specifically designed to meet the needs and interests of adults who wish to further their education. The University's nine graduate and professional schools - Arts and Sciences, Boston-Bouvé College of Human Development Professions, Business Administration, Computer Science, Criminal Justice, Engineering, School of Law, Pharmacy and Allied Health Professions, and Professional Accounting - offer programs leading to Master's and Doctoral degrees. The School of Engineering Technology (formerly Lincoln College) and University College offer part-time undergraduate programs leading to Associate's and Bachelor's degrees (in humanities, business administration, and technical disciplines), while the Division of Continuing Education offers nondegree courses.

Northeastern University is an exciting and dynamic university in which to pursue your academic aspirations. It is also a modern, urban institution dedicated to meeting the practical challenges of the times and the community.

Research at Northeastern University

Research and scholarship are an integral part of Northeastern University's activities, promoting the intellectual growth and development that help to ensure the University's continued ability to provide quality education to its students.

The first formally organized research group at Northeastern University was the Bureau of Business Research, established in 1939 to study business principles and practices. Thereafter, research efforts on campus increased so rapidly that in 1954 a Faculty Committee on Development and Coordination of Research was established to help unify and provide direction to scholarly activity at Northeastern. From an initial grant of \$10,000 awarded to the Physics Department by the Office of Naval Research in 1945, sponsorship for University research efforts has grown to involve millions of dollars each year.

Responsibility for fostering and coordinating the development of research at Northeastern resides with the Vice President for Research, who is assisted by the University Council on Research and Scholarship and the Division of Research Management. A semi-annual newsletter entitled *Re:Search* brings information about the research and scholarly efforts of Northeastern University's faculty and students to the University community and the general public.

Northeastern's funding for research comes from a variety of sources, including the National Institutes of Health, National Science Foundation, the National Endowment for the Humanities, and the Mellon Foundation, as well as from the University through the Research and Scholarship Development Fund, the Faculty Development Fund, and the Instructional Development Fund. In recent years, there has been increasing support from industrial firms, including companies such as IBM, Dow Chemical Company, Raytheon, and GTE.

Northeastern University has numerous distinguished faculty members, many of whom have received

prestigious awards, including Sloan Scholarships, Guggenheim Fellowships, and National Institutes of Health Research Awards. Faculty members lecture the world over. In addition, many faculty members serve as consultants to industry and U.S. Government agencies and participate on a variety of national and international committees.

Current research activities span almost every academic field and include laboratory projects, theoretical studies, and technological applications. Research is underway in the areas of business, physical and biological sciences, social sciences, humanities, allied health professions, and engineering. Student participation in these activities can take place as part of regular academic programs in the form of thesis projects, specially designed independent studies, or through cooperative work assignments. Research involvement is actively encouraged and is limited only by the student's own motivation and curiosity.

University Institutes and Research Centers

Northeastern University operates a number of interdisciplinary institutes and research centers to provide administrative support and coordination for research efforts in key areas.

- Cooperative Education Research Center
- Center for Applied Social Research
- Barnett Institute of Chemical Analysis and Materials Science
- Electron Microscopy Center
- Center for Labor Market Studies
- Marine Science and Maritime Studies Center
- Center for Medical Manpower Studies
- Center for Urban and Regional Economic Studies
- Center for the Integration of Engineering and Manufacturing
- Center for Electromagnetics Research
- Center for the Study of Sport in Society

Scholarly Journals Several scholarly journals originate at Northeastern University, including *Studies in American Fiction*; *The New England Quarterly*; *The Scriblerian*; *Journal of Sport and Social Issues*; *Nineteenth-Century Contexts*; *Health Values: Achieving High-Level Wellness*.



Northeastern University in Boston

Historically, the city of Boston has played a pioneering role in American education. Today it has one of the largest and most diverse student populations in the country. Within a 25-mile radius of Northeastern University's campus are over 50 degree-granting institutions.

As a graduate student at Northeastern University, you will discover that part of the adventure of studying in Boston is exploring the cultural, educational, historical, and recreational offerings of the city. Northeastern is very much an urban university, and Boston is one of its richest resources.

Boston is both a city of tradition and a city of change. Centuries-old meetinghouses are located beside striking contemporary office buildings and large-scale civic projects. This diversity is reflected in the cultural life of the city as well. Within a short distance of the campus are numerous renowned cultural centers, such as Symphony Hall, the Museum of Fine Arts, the Isabella Stewart Gardner Museum, Horticultural Hall, and the Boston Public Library. Theater in Boston includes everything from pre-Broadway tryouts to experimental and college productions.

For those interested in sports, the Boston Red Sox, Boston Celtics, Boston Bruins, and New England Patriots play all their home games in and around the Boston area.

The University is adjacent to the Fenway, a spacious and naturalistic park designed near the turn of the last century by Frederick Law Olmstead, the world-famous landscape architect. The Fenway includes a beautiful rose garden and paths used extensively by Northeastern joggers.

Cape Cod and the North Shore are easily reached by car or public transportation for swimming, surfing, and boating. The scenic areas of northern New England are accessible for skiing, hiking, and mountain climbing.

Boston provides its student population with a stimulating environment in which to learn and grow. In turn, the considerable influence of its universities and colleges and their student populations provides Boston with a young, vibrant, and exciting ambience, quite possibly unequaled anywhere else.

Graduate Degrees and Programs

Graduate School of Arts and Sciences

Master of Arts

Economics
English
History
Journalism
Political Science
Psychology
Psychology: Applied Behavioral Analysis
Social Anthropology
Sociology
Writing

Master of Science

Biology
Chemistry
Economic Policy and Planning
*Law, Policy, and Society
Mathematics
Physics

Master of Science in Health Science

Master of Journalism

Master of Technical and Professional Writing

Master of Public Administration

Doctor of Philosophy

Biology
Chemistry
Economics
*Law, Policy, and Society
Mathematics
Physics
Psychology
Sociology

* *Interdisciplinary program*

Certificate of Advanced Graduate Study
Advanced Literary Study

Certificate
Technical Writing Training Program
Writing

*Graduate School of Boston-Bouvé College
of Human Development Professions*

Master of Education
Consulting Teacher of Reading
Counseling
Curriculum and Instruction
Educational Research
Human Development
Rehabilitation
Special Education

Master of Science
Counseling Psychology
Physical Education
Recreation, Sport, and Fitness Management
Rehabilitation Counseling
Speech-Language Pathology and Audiology

Certificate of Advanced Graduate Study
Counseling
Educational Administration
Rehabilitation

Doctor of Education
Leadership: Administration and Supervision
Counseling
Education Administration
Rehabilitation Administration

Nondegree Programs
Elementary Education
Moderate Special Needs
Secondary Education
Severe Special Needs
School Counseling and School Psychology
Substance Abuse (Interdisciplinary)

Graduate School of Business Administration

Master of Business Administration

Cooperative Education MBA

Full-time MBA

Part-time MBA

High-Tech MBA

Executive MBA

Nondegree Certificate Program

Advanced Study in Business Administration

Graduate School of Computer Science

Master of Science in Computer Science

Artificial Intelligence

Communications and Networks

Databases

Interactive Systems Design

Systems Software

Theory

Doctor of Philosophy

Graduate School of Criminal Justice

Master of Science in Criminal Justice

Administration and Planning

Criminology and Research

Security Administration

Multidisciplinary Concentration

Graduate School of Engineering

Master of Science

Chemical Engineering

Civil Engineering

Electrical Engineering

Industrial Engineering/Engineering Management

Industrial Engineering

Information Systems

Mechanical Engineering

*Transportation

* *Interdisciplinary program*

Master of Science in Chemical Engineering

Master of Science in Civil Engineering

Construction
Environment
Geotechnical
Public Works
Structures
Transportation

Master of Science in Computer Systems Engineering

CAD/CAM
Engineering Software Design
Robotics

Master of Science in Electrical Engineering

Communications and Signal Processing
Computer Engineering
Control Systems and Signal Processing
Electronic Circuits and Semiconductor Devices
Fields, Waves and Optics
Power Systems

Master of Science in Engineering Management

Computer and Information Systems
General Program
Manufacturing Systems
Operations Research and Reliability Analysis

Master of Science in Industrial Engineering

Computer and Information Systems
General Program
Manufacturing Systems
Operations Research and Reliability Analysis

Master of Science in Information Systems

Master of Science in Mechanical Engineering

Material Science and Engineering
Mechanics
Thermofluid Engineering

Electrical Engineer Degree

Industrial and Information Systems Engineer Degree

Mechanical Engineer Degree

Doctor of Engineering

Chemical Engineering

Doctor of Philosophy

Chemical Engineering

Civil Engineering

Electrical Engineering

Industrial Engineering and Information Systems

Mechanical Engineering

*Graduate School of Nursing***Master of Science***Graduate School of Pharmacy and Allied Health Professions***Master of Science**

Biomedical Science

Hospital Pharmacy

Medical Laboratory Science

Medicinal Chemistry

Pharmacology

Master of Health Professions

General Option

Health Policy

Physician Assistant

Regulatory Toxicology

Doctor of Philosophy

Biomedical Science with specialization in:

Medical Laboratory Science

Medicinal Chemistry

Pharmaceutical Sciences

Pharmacology

Toxicology

Doctor of Pharmacy**Nondegree Certificate Programs**

Health Record Administration

Medical Technology

Perfusion Technology

Physician Assistant

Respiratory Therapy

Professional Schools And Degrees

Graduate School of Professional Accounting

Master of Science in Accounting

School of Law

Juris Doctor



The Graduate School of Arts and Sciences

General Regulations

The general regulations of the Graduate School, which follow, are minimal requirements shared by the several degree programs. The student is advised to consult the appropriate departmental section for a statement of additional requirements in specific programs.

Eleven departments in the College of Arts and Sciences offer work at the graduate level. The master of arts degree may be earned in economics, English, history, journalism, political science, psychology, sociology, social anthropology, and writing. The master of science degree is awarded in biology, chemistry, economic policy and planning, mathematics, and physics. The Master of Science in Health Science, the Master of Journalism degree in News Media Management, the Master of Technical and Professional Writing, and the Master of Public Administration degrees are also offered. In addition, students may earn the certificate of advanced graduate study in the program of advanced literary study. Nondegree certificate programs are available in writing and in technical writing.

The doctor of philosophy degree is available in biology, chemistry, economics, mathematics, physics, psychology, and sociology.

The Law, Policy, and Society program offers interdisciplinary degree options. Interdisciplinary study is also available in clinical chemistry.

Application

Completed applications, recommendation forms, and complete official transcripts should be sent directly to the appropriate academic department. Applicants should make the necessary arrangements, where required, to have official reports of the Graduate Record Examination (GRE) and the Miller Analogies Test forwarded to the office of the Graduate School of Arts and Sciences. (Students interested in clinical chemistry should direct applications to the Graduate School of Pharmacy and Allied Health Professions.)

Prospective students should consult the departmental sections for individual program deadlines for application. While the deadlines vary and exceptions are occasionally made, necessary supporting documents must be on file with the departmental office at least eight weeks before the date of registration for the

quarter in which the student wishes to begin his/her graduate work. However, students desiring assistantships should be aware that priority in these awards is generally given to applications submitted before March 15. Again, departments may have earlier or later deadlines. Please refer to the appropriate departmental section for complete information.

All applicants to the Graduate School are strongly urged to take both the aptitude and advanced portions of the GRE. These tests are presently required by the departments of Biology, History, Journalism, Mathematics, Physics, Psychology, Sociology, and the Law, Policy, and Society program. The Political Science department requires GRE aptitude test scores (verbal, quantitative and analytical).

Applications for the GRE can be obtained by writing to:

Educational Testing Service
Box 955
Princeton, New Jersey 08540

At least two letters of recommendation are required by all departments; Biology, Chemistry, History, Journalism, Law, Policy, and Society, Math, Physics, Political Science, Psychology, and Sociology/Anthropology require three letters. Candidates for financial awards should indicate their candidacy to those supplying references.

Though candidates for admission to Arts and Sciences graduate programs apply through the individual programs, the final decision concerning admissions is made by the Office of the Dean of the College of Arts and Sciences.

International Student Application

International students are responsible for submitting all supporting materials required by the department, as listed above and in the specific departmental section. In addition, each student is required to have a Declaration and Certification of Finances (DCF) form, as well as evidence of English proficiency on file with the Graduate School office at least ten weeks before the date of registration for the quarter in which the student expects to begin a scholastic program.

Evidence of English proficiency may consist of (1) satisfactory results of the Test of English as a Foreign Language (TOEFL); (2) proof of a minimum of four years of study culminating in the receipt of a degree in

an undergraduate institution abroad where the medium of instruction is English; or (3) proof of completion of a degree program at an American college or university.

Applications for TOEFL may be obtained by writing to:

Educational Testing Service
Box 899
Princeton, New Jersey 08540

Students without adequate evidence of English proficiency may be admitted conditionally and evaluated by the English Language Center prior to registration. Students who do not demonstrate adequate English proficiency will be required to enroll in the English Language Center Intensive Language Course for at least one quarter before enrolling in a full academic program. Such students may be permitted, with approval of the Director of the English Language Center and of the academic advisor, to enroll in academic coursework at the same time as they participate in Intensive English.

Admission

To be considered for graduate work, an applicant must submit a complete official transcript, indicating the award of a bachelor's degree from a recognized institution, and provide evidence of being able to pursue creditably a program of graduate study in the chosen field. Acceptance to the Graduate School is granted upon recommendation of the departmental graduate committee after a review of the completed application.

In addition to the above, international students must have submitted evidence of financial support. Those who have not submitted acceptable evidence may not be granted a visa and will not be permitted to register.

International Teaching Assistant Orientation

All international students receiving an assistantship for the first time must participate in a week-long intensive orientation prior to the beginning of the fall quarter. This orientation is intended to provide international teaching assistants with the opportunity to sharpen their speaking and presentational skills, as well as to introduce them to the culture of the American classroom. This orientation and the weekly seminars that are offered throughout the fall quarter are mandatory for first-time international teaching assistants.



Regular Student

Those students who are admitted to a degree program.

Provisional Student

Students whose academic records do not qualify them for acceptance as regular students. Provisional students must obtain a B (3.000) average in the first twelve quarter hours of study or meet specifically delineated departmental requirements to qualify for acceptance to a degree program.

Special Student

Students with a bachelor's degree who are not matriculated in a degree program. All those interested in this status should inquire with the Graduate School office regarding application procedures and deadlines. Acceptance as a special student is in no way related to admission to a departmental degree program. However, those special students subsequently admitted to a degree program may petition through their departments to the Director of the Graduate School to apply the first twelve quarter hours of credit earned as special students toward degree requirements. Special students are expected to maintain a B (3.000) average in the first twelve quarter hours of study.

Doctoral Student

Students admitted to a doctoral program.

Formal Doctoral Degree Candidate

Doctoral students who have completed forty quarter hours of acceptable graduate work, have passed the departmental qualifying examination, and have been certified by the Graduate School of Arts and Sciences.

Students must register within the dates and times listed on the school calendar. The place of registration will be announced quarterly. Students who fail to register will not earn credit or a grade for the course(s) in question.

Students are encouraged to obtain advisor approval of course selections each quarter. In some departments this approval is required. Students should check with individual departments for specific guidelines.

All work for advanced degrees must be registered for and completed at the University, unless approval has

been obtained from the Director of the Graduate School for work taken elsewhere. Procedures for obtaining such approval are described in the section of this catalog on transfer credit.

Programs of Study A graduate student is considered a full-time student if enrolled in a minimum of either four courses or 12 quarter hours of credit for the quarter with the following exceptions:

- a. Students for whom English is a second language, at the discretion of their department, will be considered full-time if they are enrolled in a minimum of three courses or are carrying 9 quarter hours of credit.
- b. Students who hold Stipended Graduate Assistantships will be considered full-time if enrolled for a minimum of 6 quarter hours of credit.
- c. Students who hold Northeastern University Tuition Assistantships will be considered full-time if enrolled for a minimum of 8 quarter hours of credit.
- d. Students enrolled in doctoral research are considered full-time.
- e. All graduate students who are in continuation status may be considered full-time at the discretion of the departments. It is ordinarily assumed that such students will be in residence, but exceptions are permissible.

Part-time students are not permitted to enroll in more than two courses per quarter without formal approval of the departmental chairperson or a designated official. Courses in most fields are offered in both the afternoon and evening.

Grading System The student's performance in graduate courses will be graded according to the following numerical equivalents:

- A (4.0) These grades are given to those students whose performance in the course has been of very high graduate caliber.
- A- (3.667) performance in the course has been of very high graduate caliber.
- B+ (3.333) These grades are given to those students whose performance in the course has been at a satisfactory level.
- B (3.0) performance in the course has been at a satisfactory level.
- B- (2.667) level.
- C+ (2.333) These grades are given to those students whose performance in the course is not at the level expected.
- C (2.0) performance in the course is not at the level expected.
- C- (1.667) in graduate work.

- F (0) This grade is given to those students whose performance in the course is unsatisfactory.

In addition, the following letter designations are used:

- I Incomplete without quality designation. This grade may be given to those students who fail to complete the work of the course.
- L Audit without credit.
- S Satisfactory without quality designation.
- U Unsatisfactory without quality designation.
- W Withdrawal after the fifth week of classes.

The I grade will be changed to a letter grade when the deficiency that led to the I is corrected to the satisfaction of and in the manner prescribed by the instructor in the course. Incomplete grade clearance forms are available in the Graduate School Office, 400 Meserve Hall, and should be completed by both the student and the instructor at the time the incomplete grade is given. The period for clearing such a grade will be restricted to one calendar year from the date of its first being recorded on the student's permanent record.

In addition, no letter grade changes are permitted after one calendar year from the date the grade is first recorded on the student's record.

Students who wish to audit a course must indicate this to the instructor. While no credit will be given for an audit, audits do appear on the student's transcript. Registration changes from an audit to a graded status in a course may not be made after the first day of classes.

Individual faculty members may choose not to use the plus and minus designations. If they elect to use the whole letters only, they must announce this policy to the class at the beginning of the quarter.

Hours Credits

All credits are entered as quarter hours. A quarter hour of credit is equivalent to three fourths of a semester hour of credit.

Continuity of Program

Students are expected to maintain continuous progress toward their intended degrees. Any student who does not attend Northeastern for a period of one year may be required to apply for readmission.

Withdrawals

In order to withdraw from a course, a student must fill out an official withdrawal form obtained at the Registrar's Office or at the Suburban Campus Office. Withdrawals may be made through the ninth week of the quarter. However, withdrawals that are made after the fifth week of the quarter will be recorded with a 'W' grade on the student's transcript.

Students will be withdrawn as of the date on which the form is received by the Registrar's Office. Ceasing to attend a class or simply notifying the instructor of intention to withdraw does not constitute an official withdrawal.

Changes in Requirements

The continuing development of the Graduate School requires frequent revision of curricula. When no hardship is imposed on the student because of changes, and when the facilities of the school permit, the student is expected to meet the requirements of the most recent catalog. However, if it can be demonstrated to the Director of the Graduate School that doing so does impose a substantial hardship, the requirements in the bulletin of the year in which the student matriculated will be applicable.

Application for the Diploma

Application for the diploma is made by filing a commencement card with the Registrar's Office. Even though all other degree requirements may have been met, the commencement card must be filed on or before the applicable date listed in the calendar in order to assure that the degree will be conferred in the desired year. It is the student's responsibility to make sure that degree requirements have been met.

The Master's Degree

Academic Requirements

A candidate for the master's degree must complete a minimum of forty quarter hours of graduate-level coursework and such other study as may be required by the department in which the student is registered.

To qualify for the degree, a cumulative average of 3.000, equivalent to a grade of B, must be obtained. This average will be calculated quarterly by the Graduate School according to the grading system as specified on page 26, and will exclude any transfer credits or repeated courses. A student who does not maintain a 3.000 cumulative average for two consecutive

tive quarters or is otherwise not making satisfactory progress toward degree requirements, as specified by the individual department, may be terminated at the discretion of the graduate program committee.

Not more than two courses, or six quarter hours of credit, whichever is greater, may be repeated in order to satisfy the requirements for the degree. Only such repeats will be counted in calculating the cumulative average requirement.

Within the above limitations, a required course for which a grade of F is received must be repeated with a grade of C or better and may be repeated only once. Similarly, a student may elect to repeat a required course in which a C has been received. Elective courses in which an F has been received may be repeated once to obtain a C or better.

In calculating the overall cumulative average, all graduate level coursework completed at the time of clearance for graduation will be counted unless designated at the time of registration as not for graduate credit.

Comprehensive examination

A final written or oral comprehensive examination is required in some programs. This examination will be given by the department concerned at least two weeks before the commencement at which the degree is expected.

Thesis

Theses are required in some programs and should demonstrate the individual's capacity to execute independent work based on original material.

Theses must be approved by the departmental graduate committee, and, in cases in which a grade is required, must receive a grade of B (3.000) or better to be accepted.

Students who have not completed their thesis after having registered for the specified number of thesis credits must register and pay for Master's Thesis Continuation each subsequent quarter until the thesis is complete. Master's Thesis Continuation will carry no credit but will be recorded on the student transcript with the appropriate grade (S or U) for each quarter of registration.

Language requirement

An examination to show evidence of ability in one or more foreign languages is required in some graduate programs. This knowledge is established by an examination, which will be administered by the ap-

appropriate department or the office of the Graduate School at least twice yearly.

Transfer Credit

Students should petition, in writing, through their departments to the Director of the Graduate School of Arts and Sciences for all transfer credit. An official transcript should be attached to the petition. A maximum of twelve quarter hours of credit obtained at another institution may be accepted toward the master's degree, provided that the credits transferred consist of a grade of B or better in graduate-level courses, are in the candidate's field, have been earned at a recognized institution, and have not been used toward any other degree. Transfer credit grades may not be used for the purpose of obtaining the academic average necessary for completion of the degree requirements.

Time Limitation

Course credits earned in the program of graduate study or accepted by transfer are valid for a maximum of seven years, unless an extension is granted by the Director of the Graduate School of Arts and Sciences. Students should petition, in writing, through their departments to the Director of the Graduate School for such extensions.

The Doctor of Philosophy Degree

The doctor of philosophy degree is awarded to candidates who give evidence of high attainment (a minimum cumulative average of 3.000) and research ability in their major fields. Specific degree requirements are administered by a committee in charge of the degree program. This committee may be a departmental graduate committee or the committee of the Graduate School, depending upon the nature of the program. It is the responsibility of the chairperson of the committee to certify to the Graduate School office the completion of each requirement for each candidate.

Admission

Each degree program has an established admission procedure for students starting their doctoral work at Northeastern University. Please consult the appropriate departmental section for further details.

Residence Requirement

A candidate for the doctor of philosophy degree must spend the equivalent of at least one academic year in

residence at the University as a full-time graduate student. The committee of each degree program specifies the method by which the residence requirement is satisfied.

Degree Candidacy Formal degree candidacy is established when students have completed forty quarter hours of acceptable graduate work (where applicable), have passed the qualifying examination, and in all cases have been certified by the Graduate School of Arts and Sciences.

Qualifying Examination Students must pass a qualifying examination within time limits set by the committee of each degree program.

Comprehensive Examination Degree programs may require a comprehensive examination during the time in which a student is a degree candidate.

Course Requirements The minimum course requirement of forty quarter hours constitutes the same work normally required for a master's degree. Course requirements beyond this minimum in each doctoral program are specified by the committee in charge of the doctoral program.

Dissertation Each doctoral student must complete a dissertation that embodies the results of extended research and makes an original contribution to the field. This work should give evidence of the candidate's ability to carry out independent investigation and interpret in a logical manner the results of the research. The method of approval of the dissertation is established by the committee in charge of the degree program.

Language Requirement The foreign language requirement is established by the committee in charge of each degree program.

Final Oral Examination The final oral examination will be on the subject matter of the doctoral dissertation and on important developments in the field of the dissertation. Other fields may be included if recommended by the examining committee.

This examination will be taken after completion of all other degree requirements and must be held at least two weeks prior to the commencement at which the degree is to be awarded.

Transfer Credit

Students should petition, in writing, through their departments to the Director of the Graduate School of Arts and Sciences for all transfer credit. A maximum of twelve quarter hours of credit obtained at another institution may be accepted toward the doctoral degree, provided that the credits transferred consist of a grade of B or better in graduate-level courses, are in the candidate's field, have been earned at a recognized institution, and have not been used toward any other degree. Transfer credit grades may not be used for the purpose of obtaining the academic average necessary for completion of the degree requirements.

Time Limitation

After the establishment of degree candidacy, a maximum of five years will be allowed for the completion of degree requirements.

Registration

All students must register for coursework or dissertation as approved by their advisors or the departmental registration officers. After the first registration for doctoral work, registration must be continuous unless withdrawal is allowed by the committee in charge of the degree program and certified by the Graduate School of Arts and Sciences. For each quarter beyond the first three quarters that a doctoral candidate is working on the dissertation, he/she must register for Doctoral Continuation, which is listed in the course listing for each doctoral degree-granting department. Students must be registered for dissertation during the quarter in which they take the final oral examination.

Interdisciplinary Programs

Some graduate students may wish to pursue doctoral programs that involve substantial work in two or more departments. To meet this need, an interdisciplinary program may be established that corresponds in scope and depth to doctoral standards but does not agree exactly with the individual departmental regulations. For such possibilities, the option discussed below is available.

Admission

Application for admission to interdisciplinary doctoral study consists of the submission of a carefully thought out written proposal describing the areas of proposed study and research, as well as the qualifying and com-

prehensive examination system to be used. The proposal may be a part of the initial application for admission to graduate study at Northeastern University, or it may be submitted by a graduate student already enrolled. In either case, the admission materials should be prepared in consultation with an academic advisor. The proposal may be directed to a doctoral degree-granting department or to the Director of the Graduate School, who will forward it to the appropriate department. In either case, admission to interdisciplinary doctoral study requires favorable recommendation by the sponsoring doctoral degree-granting department and approval by authorized representatives of the graduate study committees of the departments appropriate to the disciplines covered by the applicant's proposal. The sponsoring department will serve as the student's registration base.

Formation of Interdisciplinary Committee

A student who has been accepted for interdisciplinary study must obtain the consent of an advisor who will direct the doctoral dissertation. The advisor, who may or may not be a member of the registration department, will be chairperson of the interdisciplinary committee for this student. A second committee member will be appointed from the registration department by its chairperson. These two members will obtain one or more additional members or request the Director of the Graduate School to do so. At least two departments must be represented on the committee, and a majority of the committee must come from doctoral degree-granting departments. The chairperson of the registration department will notify the Director of the Graduate School of the membership of the committees as soon as arrangements are complete.

Duties of Interdisciplinary Committee

A member of the interdisciplinary committee who is also a member of the registration department will serve as the registration officer to approve the course registration for the student. A copy of the approved course registration must also be filed with the other committee members and with the graduate study committee of the registration department.

The interdisciplinary committee will be responsible for the administration of the qualifying examination, language examination, and comprehensive examination and approval of the dissertation. This committee must also certify to the registration department the comple-

tion of the requirements for the award of the doctoral degree. The interdisciplinary committee is also responsible for a periodic report to the registration department concerning the student's progress and must obtain approval from that department for any changes in the approved program.

The interdisciplinary committee must assure that the student's program represents standards comparable to those of the registration department and that the program is not so broad as to have inadequate depth in any area.

The student's program may be reviewed at any time by the Director of the Graduate School to determine whether objectives of the program are being met.



Fields of Study

The departmental sections that follow describe the program offerings and degree requirements. Additionally, a list of courses available to a student during the typical period of attendance required to obtain a degree is provided. Descriptions of all courses are published annually in the **Graduate School of Arts and Sciences Course Descriptions** booklet.

Biology

The primary objective of the graduate program in biology is to enable the student to acquire a fundamental education in biology and to achieve some level of mastery of a chosen area of specialization. To reach this objective students should be prepared to formulate and solve problems of fundamental importance to biology.

Professors

Gwilym S. Jones, PhD, *Indiana State University*,
Acting Chairperson

Francis D. Crisley, PhD, *University of Pittsburgh*

Charles A. Meszoely, PhD, *Boston University*

M. Patricia Morse, PhD, *University of New Hampshire*

Nathan W. Riser, PhD, *Rutgers University, Emeritus*

Fred A. Rosenberg, PhD, *Rutgers University*

Ernest Ruber, PhD, *Rutgers University*

Kenneth P. Sebens, PhD, *University of Washington*

Phyllis R. Strauss, PhD, *Rockefeller University*

Carol M. Warner, PhD, *University of California at Los Angeles*

David C. Wharton, PhD, *Pennsylvania State University*

Associate Professors

Joseph L. Ayers, Jr., PhD, *University of California*,
Santa Cruz

Kostia Bergman, PhD, *California Institute of Technology*

Donald P. Cheney, PhD, *University of South Florida*

Charles H. Ellis, Jr., PhD, *John Hopkins University*

Aileen F. Knowles, PhD, *University of California*,
Riverside

Helen Lambert, PhD, *University of New Hampshire*

Richard L. Marsh, PhD, *University of Michigan*

Susan Powers-Lee, PhD, *University of California*,
Berkeley

Daniel Scheirer, PhD, *Pennsylvania State University*

Henry O. Werntz, PhD, *Yale University*

Assistant Professors

John W. Bodnar, PhD, *Oregon State University*

Frederick C. Davis, PhD, *University of Texas at Austin*

H. William Detrich, PhD, *Yale University*

Jacqueline M. Piret, PhD, *Massachusetts Institute of Technology*

Mary Ellen Polvino-Bodnar, PhD, *Yale University*

Wendy A. Smith, PhD, *Duke University*

Jonathan D. Witman, PhD, *University of New Hampshire*

Graduate Program

Research

This department offers programs of concentration in animal physiology, biochemistry/cell/molecular biology, botany, ecology, marine biology, microbiology, and vertebrate zoology. Research in these areas is actively pursued by departmental faculty. The department is well equipped with remodeled, air-conditioned laboratories. Other notable facilities controlled by or available for use by the department include the Electron Microscopy Center, a large greenhouse on a suburban campus, a microcomputer network linked to a VAX 8650, the Marine Science Center at Nahant (with a running seawater system and a research vessel), animal and aquarium rooms, a vertebrate museum, an herbarium, controlled-environment rooms and chambers, cell culture facilities, and a wide variety of preparative and analytical instruments, such as spectrophotometers, centrifuges, ultracentrifuges, isotope counters, HPLC, an electron paramagnetic resonance spectrometer, a gas chromatograph, fluorescent microscopes, electrophysiological devices, and equipment for image analysis.

Procedures for Admission

Application forms and catalogs should be requested from the Biology Department office. Requests for information about programs should be directed to the graduate coordinator. There are three programs in biology: master of science in biology (full- or part-time); master of science in health science (full- or part-time); and doctor of philosophy (full-time only).

Financial Aid

General Policies

All full-time students enrolled in the Biology Department's master's or doctoral degree programs are eligible to be considered for financial aid. As noted in the section of this catalog on financial assistance, all students who hold assistantships and research fellowships are expected to devote full time to their studies and the duties of the award.

As a general departmental policy, a master's degree student is eligible for not more than two years of financial aid, and a doctoral student is eligible for not more than three years. After the first year, reappointments are considered on the basis of academic performance, and on professor and student evaluations from the assigned classes.

Application for Financial Aid

To be considered for financial aid, eligible students of any departmental program must submit the Graduate Record Examination (GRE) scores, including the Advanced Test Scores in Biology; Chemistry; or Biochemistry, Cell and Molecular Biology. Awards are made on the basis of academic record, GRE scores, consideration of the awards available, and the candidate's experience and skills for teaching or research in the various fields. *Financial aid is available on a limited basis; therefore, early application is encouraged.*

The Master of Science in Biology

The master of science in biology is a research-oriented degree that is offered on a part-time or full-time basis. The department offers concentrations in both coursework and research in areas of study that include animal physiology, biochemistry/cell/molecular biology, botany, ecology, marine biology, microbiology, and vertebrate zoology.

Admission

In addition to the requirements of the Graduate School of Arts and Sciences, applicants should have a background that includes one year of inorganic chemistry (which should include analytical chemistry), organic chemistry, physics, and mathematics, and courses equivalent to the six one-quarter courses (four quarter hours each) of the biology undergraduate core curriculum (BIO 1103-BIO 1261). Students with deficien-

cies should remove them during the first twenty quarter hours of graduate work.

Transcripts of academic work and three letters of recommendation are required. GRE scores, including the Advanced Test Scores in Biology; Biochemistry, Cell, and Molecular Biology; Chemistry; or Physics must be submitted. Admission decisions are made by the Biology Department's Graduate Committee.

Provisional and Regular Status

If a student has a less than optimum undergraduate average, low GRE scores, or a number of deficiencies, the student may be admitted with provisional status. A student in this category is not eligible for financial aid. A provisional student must have a B average at the end of twelve quarter hours of graduate credit. At that time the student will be given regular status (if maintaining a B average) or terminated from the program. A regular student is expected to maintain a B average but does not necessarily come under review at the end of the twelve quarter hours and is eligible for all forms of financial aid.

Deficiencies

Deficiencies may be filled by (1) taking course equivalents in the College of Arts and Sciences; (2) taking University College (evening) courses; (3) taking equivalent undergraduate lecture-laboratory courses at another four-year institution. Neither of the latter two options will receive graduate credit; however, graduate credit may be awarded under the first option if the courses taken are the graduate equivalent, as described in the following section.

University College Equivalents of Arts and Sciences Courses

Arts and Sciences		University College
BIO 1211	Environmental and Population Biology	BIO 4224, BIO 4225, BIO 4226
BIO 1260	Genetics and Developmental Biology	BIO 4235, BIO 4236, BIO 4237
BIO 1261	Cell Biology	BIO 4246, BIO 4247, BIO 4248

It is strongly recommended that students take the regular Northeastern University day undergraduate courses or their two-quarter hour graduate credit equivalents (listed below) to remedy their deficiencies:

BIO 3510	Environmental and Population Biology (2 QH)
BIO 3560	Genetics and Developmental Biology (2 QH)
BIO 3561	Cell Biology (2 QH)

academic requirements

Forty quarter hours of academic work are required to complete the MS in biology. Of this, twenty quarter hours must be in Biology Department graduate courses (BIO 1300, BIO 1400, BIO 3500, and BIO 3600 courses). Four quarter hours of seminar are required. At least two of these hours must be BIO 3690; the other two hours may be BIO 3690 or BIO 3790. Additionally, six quarter hours of research (BIO 3701-3704 MS thesis or BIO 3731-3734 MS literature dissertation) are required. Of the remaining ten quarter hours required, four quarter hours may be additional research credits (BIO 3721-3724, BIO 3701-3704, BIO 3731-3734) or all may be Biology Department graduate courses (excluding BIO 3690) or approved courses from other departments within the University. Any transfer credit is included within these ten quarter hours.

Note, in any case, that a maximum of ten quarter hours of research courses is applicable to the MS degree, which must include a minimum of six quarter hours of BIO 3701-3704 or BIO 3731-3734.

A cumulative average of 3.000 for all graduate work is required for the award of the MS degree. All regulations of the Graduate School of Arts and Sciences apply with regard to maintenance of academic standing.

research

Either six quarter hours of MS thesis (BIO 3701-3704) or six quarter hours of MS literature dissertation (BIO 3731-3734), both of which culminate in a written report, is required for the MS in biology.

MS Thesis

The MS thesis involves a program of laboratory or field research leading to the writing and oral defense of a thesis. The candidate works under the direction of a member of the faculty and a committee of two other biology faculty members.

MS Literature Dissertation

The MS literature dissertation involves a program of extensive literature research leading to a comprehensive written review of an important biological problem and an oral examination. This study is undertaken with a member of the biology graduate faculty and a committee of two other biology graduate faculty.

Master of Science in Health Science

The MSHS degree is offered to provide a more flexible set of options for students interested in health sciences. Students may enroll on a full- or part-time basis. The specific curriculum of studies by MSHS degree students is determined by consultation with the student's advisor, within the general guidelines specified under Academic Requirements below.

Admission

In addition to the requirements of the Graduate School of Arts and Sciences, applicants should have a background that includes one year each of inorganic chemistry (which should include analytical chemistry), organic chemistry, physics, and mathematics, and courses equivalent to the six one-quarter courses (four quarter hours each) of the biology undergraduate core curriculum (BIO 1103-BIO 1261). Students with deficiencies should remove them during the first twenty quarter hours of graduate work.

Candidates are required to submit transcripts of academic work and three letters of recommendation.

Academic Requirements

For the MSHS, the candidate must complete forty quarter hours of academic work. Of this work, twenty quarter hours must be coursework in Biology Department graduate courses (BIO 3000 courses, excluding BIO 3690, BIO 3721-3724, BIO 3701-3704, and BIO 3731-3734). In addition, four seminars (BIO 3690) are required. Two of these seminars, with prior approval of the graduate coordinator, may be graduate seminars offered by other departments in the University. The remaining sixteen quarter hours of graduate credit may be Biology Department graduate courses, up to six quarter hours of research courses (including BIO 3711-3714), or approved courses in other departments within the University. A maximum of twelve quarter hours of transfer credit may be included within these sixteen quarter hours.

A cumulative average of 3.000 for all graduate work is required for award of the MSHS. The regulations of the Graduate School apply with regard to maintenance of academic standing.

Final Comprehensive Exam

In the final year of graduate study, the MSHS candidate must successfully complete written final comprehensive examinations in a major and minor area, unless the research option (described below) is exercised. This ex-

amination is designed to test the candidate's proficiency in the areas of study. If it is not successfully completed, one reexamination is permitted. Candidates should notify the graduate coordinator six months before they intend to take the examination.

Research Option

A research option (MS thesis or literature dissertation) is available, and all rules as stated in the MS in Biology section apply. A successful oral defense of thesis or literature dissertation substitutes for the final comprehensive exam.

The Doctor of Philosophy

Admission

In order to be considered for admission into the doctoral program, an individual must have a bachelor's or master's degree which should be in a biological science. Individuals with degrees in other natural sciences may be considered depending on their interests and background. Applicants should have the undergraduate background specified for applicants to the MS program above and must submit transcripts of all academic work and three letters of recommendation. GRE scores for the general test and also for the subject test in Biology; Chemistry; Physics; or Biochemistry, Cell and Molecular Biology are required.

Transfer From the Master's Programs

A candidate for the MS or MSHS degree may apply for transfer to the PhD program after having completed 30 quarter hours of graduate study in the MS program. This application must include an up-to-date transcript of courses taken since admission to the Master's Program, three letters of reference from faculty members at Northeastern, and scores from the GRE exam (general and subject exam) taken within the last 5 years. The application must also include a letter of commitment from the student's proposed doctoral dissertation advisor. Transferring students must meet all course requirements for the PhD.

Conferring the MS

A PhD candidate in good standing, who has successfully completed the qualifying examination (both written and oral portions; see below), and completed the first 40 quarter hours of course and research credit required for PhD students with a 3.000 cumulative average, may apply to receive the MS degree without submitting a

thesis. Students entering with a master's degree are not eligible for this option.

Residence Requirement

After admittance to the doctoral program, the student may satisfy the residence requirement by one year of full-time graduate work or by two years of half-time graduate work.

Qualifying Examination

The PhD Candidacy Examination consists of both written and oral examinations, with the written examination preceding the oral examination. The written examination is intended to evaluate the student's knowledge at the graduate level. This examination covers both basic principles and knowledge of current literature in selected areas of biology related to the student's specialization. The oral examination, termed the PhD research proposal defense, is intended to ascertain the student's readiness to pursue a research program in the area chosen, and will focus on areas related to the research proposal. The schedule for the written examination is set by the graduate committee of the department and in general follows the completion of the majority of the required coursework. The oral examination (the PhD research proposal defense) is to be completed within 6 months after the completion of the written examination. A student must successfully complete both written examination and the oral research proposal defense in order to be a PhD candidate.

Academic Requirements

PhD students entering with a Bachelor's degree are expected to take 40 quarter hours of coursework with a similar distribution to that outlined for the MS degree above. Requirements after the first two years, or upon admission for those entering with a Master's degree, are variable depending on the recommendations of the doctoral dissertation advisor and examination committees. A cumulative average of 3.000 is required for all graduate work.

Teaching Requirement

A PhD candidate is required to spend one year as a teaching assistant in the department. If the candidate wishes this requirement to be waived, a petition must be submitted to the department's graduate committee. The petition must include evidence of equivalent teaching experience.

Language Requirement

Candidates must establish evidence of their ability to read and translate biological literature in two foreign

languages. The primary languages are French, German, and Russian. Students will be expected to choose from these languages for their examinations; however, another language may be substituted when there is considerable literature in the area of interest.

One of the language requirements may be fulfilled by completion of two courses in the general principles of statistics, biometry, and/or computer programming.

Dissertation

The dissertation is the most important part of the PhD degree and must be an original and independent scientific study. The dissertation advisor and student will work closely to evolve the problem and arrange for a PhD dissertation committee. The minimum number of members for PhD committee is five. One member must be an acknowledged expert from outside the University.

Special-Student Status

Special students are not matriculated in a degree program, and acceptance as a special student is not related to admission into a departmental degree program.

However, those special students who are subsequently admitted into a degree program may petition through the graduate coordinator to the Director of the Graduate School to apply the *first twelve* quarter hours of graduate credit earned as a special student toward degree requirements. Special students are expected to maintain a cumulative average of 3.000 in the first twelve quarter hours of study.

Further information on admission procedures and standards can be obtained from the Graduate School of Arts and Sciences or the graduate coordinator.

Interdisciplinary Programs

Admission

Application and credentials for admission to interdisciplinary programs involving the Biology Department, where this department is clearly the department of registration (see general section on interdisciplinary programs), should be submitted as described under Admission: The Doctor of Philosophy for biology. The in-

terdisciplinary committee will consist of at least five members. The composition of this committee will be determined by mutual consent of the departments involved; however, if the dissertation advisor is in the Biology Department, at least three members will be from this department. Upon admission, suitable interdisciplinary course requirements will be determined by the dissertation committee.

Course Listings

The following is a listing of all departmental course offerings. Please refer to the *Graduate Schools Course Descriptions* for course descriptions and relevant prerequisites.

Most undergraduate biology courses in the series designated BIO 1300-1400 are available for graduate credit with advisor approval. Please consult the undergraduate or other appropriate bulletin for course details. The following courses are so considered:

Course No.	Course Name	Cred
BIO 1311	Evolution	4 Q
BIO 1320	General Microbiology	5 Q
BIO 1328	The Microbial World	4 Q
BIO 1329	Marine & Fresh Water Microbiology I	2 Q
BIO 1330	Marine Botany	4 Q
BIO 1341	Vertebrate Zoology	4 Q
BIO 1347	Embryology	5 Q
BIO 1348	Animal Histology	4 Q
BIO 1351	Comparative Vertebrate Anatomy	5 Q
BIO 1370	Marine Invertebrate Zoology	5 Q
BIO 1371	Biological Oceanography	4 Q
BIO 1401	Histological Technique	3 Q
BIO 1411	Tropical Terrestrial Ecosystems	3 Q
BIO 1412	Benthic Marine Ecology	4 Q
BIO 1420	Microbial Physiology	4 Q
BIO 1460	Current Concepts in Cell Biology	4 Q
BIO 1465	Introductory Immunology	3 Q
BIO 1466	Introductory Immunology Laboratory	2 Q
BIO 1467	Molecular Biology	4 Q
BIO 1470	Coastal Biology I	4 Q
BIO 1471	Coastal Biology II	4 Q
BIO 1472	Coastal Biology III	4 Q
BIO 1475	Biology and Ecology of Fishes	4 Q
BIO 1477	Biology of Corals	5 Q
BIO 1478	Biology of Fishes	5 Q
BIO 1479	Adaptations of Aquatic Organisms	4 Q
BIO 1421	Medical Virology	3 Q
BIO 1422	Medical Virology Laboratory	2 Q

BIO 1427	Medical Microbiology	3 QH
BIO 1429	Marine & Fresh Water Microbiology II	2 QH
BIO 1430	Introduction to Plant Physiology	4 QH
BIO 1431	Lower Plants	4 QH
BIO 1432	Higher Plants	4 QH
BIO 1437	Structural Botany	4 QH
BIO 1438	Flora of New England	4 QH
BIO 1439	Economic Botany	4 QH
BIO 1440	Advanced Invertebrate Zoology	4 QH
BIO 1441	Parasitology	4 QH
BIO 1442	Vertebrate Paleontology	4 QH
BIO 1446	Ornithology	5 QH
BIO 1447	Herpetology	4 QH
BIO 1448	Mammalogy	5 QH
BIO 1449	Marine Birds and Mammals	4 QH
BIO 1452	Comparative Neurobiology	4 QH
BIO 1457	Neuroethology	4 QH

The following are graduate courses:

BIO 3501	Biological Laboratory Computing	4 QH
BIO 3509	Principles of Systematics	2 QH
BIO 3510	Environmental & Population Biology	2 QH
BIO 3512	River Ecology Laboratory	3 QH
BIO 3513	Benthic Marine Ecology Techniques	4 QH
BIO 3516	Aquatic Ecology	4 QH
BIO 3517	Lake Ecology Laboratory	3 QH
BIO 3518	Ecology of Salt Marshes	3 QH
BIO 3519	Ecology of Rocky Shores	3 QH
BIO 3520	Environmental Microbiology	4 QH
BIO 3521	Food Microbiology	3 QH
BIO 3522	Food Microbiology Laboratory	2 QH
BIO 3525	Theoretical Ecology	4 QH
BIO 3527	Animal Virology	3 QH
BIO 3528	Animal Virology Laboratory	2 QH
BIO 3531	Plant Growth & Reproduction	4 QH
BIO 3547	Biomechanics I, Theory	4 QH
BIO 3548	Biomechanics II, Application	4 QH
BIO 3549	Physiology and Biomechanics of Animal Activity	4 QH
BIO 3550	Cardiovascular Physiology	3 QH
BIO 3551	Cardiovascular Physiology Laboratory	1 QH
BIO 3552	Osmotic & Ionic Regulation	2 QH
BIO 3553	General Physiology of Invertebrates	4 QH
BIO 3554	Comparative Vertebrate Physiology	4 QH
BIO 3555	Topics in Physiological Ecology	2 QH
BIO 3558	Vertebrate Endocrinology	3 QH
BIO 3559	Animal Nutrition	2 QH
BIO 3560	Genetics & Developmental Biology	2 QH
BIO 3561	Cell Physiology & Biochemistry	2 QH
BIO 3563	General Biochemistry Laboratory	4 QH
BIO 3564	General Biochemistry I	4 QH
BIO 3566	General Biochemistry III	4 QH
BIO 3569	Microbial Genetics	3 QH
BIO 3572	Biology of Meiofauna	2 QH
BIO 3573	Ocean, Coastal, and Shore Studies for Teachers	4 QH
BIO 3574	Salt Marsh Ecology Laboratory	2 QH
BIO 3577	Malacology	4 QH

BIO 3601	Biological Electron Microscopy	4 Q
BIO 3605	Developmental Neurobiology	3 Q
BIO 3607	Advanced Developmental Biology	3 Q
BIO 3608	Advanced Developmental Biology Laboratory	2 Q
BIO 3609	Cellular Aspects of Development	3 Q
BIO 3610	Human Ecology	4 Q
BIO 3617	Environmental Law	2 Q
BIO 3620	Industrial Microbiology	3 Q
BIO 3621	Industrial Microbiology Laboratory	2 Q
BIO 3652	Comparative Neurobiology	3 Q
BIO 3657	Neurophysiology Laboratory	2 Q
BIO 3661	Human Genetics	3 Q
BIO 3662	Immunochemistry	4 Q
BIO 3663	Molecular Biology of Viruses	4 Q
BIO 3665	Biochemical Adaptation	3 Q
BIO 3667	Biochemistry Laboratory Rotation I	3 Q
BIO 3668	Biochemistry Laboratory Rotation II	3 Q
BIO 3669	Biochemistry Laboratory Rotation III	3 Q
BIO 3670	Developmental Biology of Marine Invertebrates	5 Q
BIO 3672	Ichthyology	4 Q
BIO 3690	Seminar	1 Q
BIO 3699	Doctoral Dissertation	0 Q
BIO 3721	Special Topics in Biology	1 Q
BIO 3722	Special Topics in Biology	2 Q
BIO 3723	Special Topics in Biology	3 Q
BIO 3724	Special Topics in Biology	4 Q
BIO 3711	Special Investigation in Biology	1 Q
BIO 3712	Special Investigation in Biology	2 Q
BIO 3713	Special Investigation in Biology	3 Q
BIO 3714	Special Investigation in Biology	4 Q
BIO 3701	MS Thesis	1 Q
BIO 3702	MS Thesis	2 Q
BIO 3703	MS Thesis	3 Q
BIO 3704	MS Thesis	4 Q
BIO 3731	MS Literature Dissertation	1 Q
BIO 3732	MS Literature Dissertation	2 Q
BIO 3733	MS Literature Dissertation	3 Q
BIO 3734	MS Literature Dissertation	4 Q
BIO 3790	Perspectives in Biology	1 Q
BIO 3798	Master's Thesis Continuation	0 Q
BIO 3799	Doctoral Dissertation Continuation	0 Q

Chemistry

The Chemistry Department offers programs leading to the MS and PhD degrees. The requirements for the MS degree may be met either via a part-time program involving only coursework (non-thesis) or via a full-time program involving coursework plus a research thesis (thesis). The PhD requires a program of coursework plus a PhD research thesis. The department's areas of concentration are in analytical, inorganic, organic, and physical chemistry. There are well-funded theoretical and experimental research programs in all of these areas, under the direction of individual faculty members.

The MS and PhD degrees prepare candidates for research, administration, and managerial work in science and technology in industrial, governmental, and academic institutions. A key feature of the department's research philosophy is the importance placed on individual interactions between faculty research directors and students in the research groups. The department's teaching at the graduate level is characterized by constant application of and reference to the primary literature in chemistry, physics, biology, and ancillary fields.

Professors

Philip M. Warner, PhD, *University of California, Los Angeles, Chairperson*

Geoffrey Davies, PhD, *Birmingham University*

David A. Forsyth, PhD, *University of California, Berkeley*

Bill C. Giessen, Dr Sci Nat, *University of Gottingen*

Arthur M. Halpern, PhD, *Northeastern University*

Barry L. Karger, PhD, *Cornell University*

Philip W. LeQuesne, PhD, *University of Auckland*

William M. Reiff, PhD, *Syracuse University*

John L. Roebber, PhD, *University of California, Berkeley*

Alfred Viola, PhD, *University of Maryland*

Paul Vouros, PhD, *Massachusetts Institute of Technology*

Professors Jointly Appointed

Robert N. Hanson, PhD, *University of California, Berkeley (College of Pharmacy and Allied Health Professions)*

John L. Neumeyer, PhD, *University of Wisconsin (College of Pharmacy and Allied Health Professions)*

Associate Professors

Thomas R. Gilbert, PhD, *Massachusetts Institute of Technology*

David M. Howell, PhD, *University of Michigan*

Conrad M. Jankowski, PhD, *State University of Iowa*

Elmer E. Jones, PhD, *Washington University*

Ira S. Krull, PhD, *New York University*

Kay D. Onan, PhD, *Duke University*

Mary J. Ondrechen, PhD, *Northwestern University*

Robert N. Wiener, PhD, *University of Pennsylvania*

Lawrence D. Ziegler, PhD, *Cornell University*

Assistant Professor

Rein U. Kirss, PhD, *University of Wisconsin, Madison*

Research

In the analytical area, the chief focuses are on separation science, mass spectroscopy, and trace element analysis. In separation science, HPLC theory and practice, separation of chiral solutes, studies on proteins, peptides, forensic analysis, and development of methodologies are major thrusts. In mass spectroscopy, combined HPLC/MS and GC-MS technology, MS/MS methodology, and studies of oxidation of steroid hormones by these techniques are current emphases. Trace element analysis methods are developed for materials such as industrial wastes, petroleum, liquefied coal products, and biological and environmental samples. Fundamental studies in plasma emission spectroscopy are also under way.

In the inorganic area, the solid-state research group emphasizes synthesis and characterization of new ceramics and alloys, high-T_c superconductors, amorphous metals, and nitrides by plasma (ion) reaction. The Mössbauer spectroscopy of a variety of metallic elements and their compounds is being studied. There are programs on catalytic oxygenation involving transition metal complexes, the new phenomenon of molecular transmetalation, some mechanistic aspects of organometallic rearrangements, and the preparation of novel polysilane polymers.

In organic chemistry, the physical organic group is concerned with synthetic and mechanistic studies of unstable species, reactive intermediates, strained ring compounds, organolithiums, isotope effects and nuclear magnetic resonance (NMR) spectroscopy as tools to investigate reactive intermediates and also with mechanisms of pericyclic reactions. The synthetic-natural products area has groups working on the isolation, structural determination, and synthesis of bioactive natural products and on the design of synthetic methodology appropriate for a wide variety of applications.

Molecular structures and conformation of organic and inorganic compounds are studied by x-ray crystallography.

The physical chemistry group has experimental interests concentrated in the areas of spectroscopy, photochemistry, and photophysics. In the theoretical area, interest is centered on the theory of electron transfer, prediction of properties of mixed-valence compounds, and novel models and mechanisms for superconductivity.

Admission

In addition to the admission requirements listed on page 23, an applicant must have completed a full year of undergraduate organic chemistry, physical chemistry, analytical chemistry, calculus, and physics. Admission policy favors those who have taken courses beyond the above minimum.

These admission requirements may be modified to accommodate applicants who have taken fewer courses than indicated above but who have outstanding records and a strong interest in chemical or interdisciplinary studies. See also the description of interdisciplinary programs.

Program Planning

Prospective students and current students should discuss their programs with a departmental advisor. The departmental advisor may be reached by calling 437-2822 and would welcome discussion of curriculum matters and program planning.

The Master of Science Degree

Thesis Program

This program may only be pursued on a full-time basis while in residence. It consists of a minimum of forty

quarter hours of graduate credit in courses, seminars, and research and a thesis based on this research. Each student is required to take at least twenty-four quarter hours of credit in graduate chemistry courses numbered between CHM 3521 and CHM 3699. Up to four quarter hours of approved graduate courses in physics, mathematics, and biochemistry may be substituted. At least eight of these courses must be taken in the first year of residence, with a minimum quality point average of 2.65 in the best eight courses taken in order to continue in the program. (For students who wish to be considered for the PhD degree, a quality point average of 3.00 in these eight courses is required and no more than five of these courses may be in any one area of concentration.) A cumulative average of 3.00 is required in all courses that have a CHM prefix and in the graduate courses in physics, mathematics, and biochemistry that are included in the minimum. In agreement with general Graduate School regulations, cumulative average of 3.000 is required for the entire program, and two courses or six quarter hours of credit, whichever is greater, may be repeated.

The student's program must include four quarter hours of credit in each of three out of the four areas of chemistry, selected from the following core courses:

- Four quarter hours of credit in analytical chemistry chosen from CHM 3521, CHM 3523, CHM 3525, and CHM 3527.
- Four quarter hours of credit in inorganic chemistry, normally in the CHM 3541 and CHM 3542 sequence.
- Four quarter hours of credit in organic chemistry, normally in the CHM 3561 and CHM 3562 sequence.
- Four quarter hours of credit in physical chemistry, in either the CHM 3581 and CHM 3582 sequence or the CHM 3591 and CHM 3592 sequence. Note that CHM 3581 and CHM 3591 by themselves are not sufficient.

In cases of unusual preparation, more advanced courses may be substituted within the given subdiscipline. Approval for any substitution should be obtained from the departmental graduate academic standing committee before any such courses are taken.

A minimum of six quarter hours of credit, but no more than fourteen, may be assigned to CHM 3810, Research and Thesis for MS degree. Each student is required to attend the appropriate section of seminar

(CHM 3800, CHM 3801, CHM 3802, CHM 3803) in each quarter of residence and is expected to conduct one seminar in each academic year of residence, for which one quarter hour of credit is assigned, up to the maximum of two quarter hours of credit.

Students in the thesis program are eligible to apply for financial support through the Department of Chemistry.

Thesis Program

This program may be pursued on a part-time basis. It consists of forty quarter hours of credit in graduate coursework, of which a minimum of thirty-two quarter hours of credit must be taken in chemistry graduate courses numbered between CHM 3521 and CHM 3699. The remainder of the program consists of any graduate courses for which the student has the necessary prerequisites. Only those graduate courses that constitute the first forty quarter hours of credit will be considered by the department. In agreement with general Graduate School regulations, two courses or six quarter hours of credit, whichever is greater, may be repeated, and a cumulative average of 3.000 is required.

The student's program must include the following core courses in the four areas of chemistry:

- Four quarter hours of credit in analytical chemistry, chosen from CHM 3521, CHM 3523, CHM 3525, and CHM 3527.
- Four quarter hours of credit in inorganic chemistry, normally in the CHM 3541 and CHM 3542 sequence.
- Four quarter hours of credit in organic chemistry, normally in the CHM 3561 and CHM 3562 sequence.
- Four quarter hours of credit in physical chemistry, in either the CHM 3581 and CHM 3582 sequence or the CHM 3591 and CHM 3592 sequence. Note that CHM 3581 and CHM 3591 by themselves are not sufficient.

In cases of unusual preparation, more advanced courses may be substituted within the given subdiscipline. Approval for any substitution should be obtained from the departmental graduate academic standing committee before any such courses are taken.

Students in the nonthesis program are not eligible for financial support through the Department of Chemistry.

Doctor of Philosophy Degree

The doctoral program in chemistry may be pursued only in residence. The additional requirements beyond those of the master's degree are designed to provide the doctoral candidate with an opportunity to demonstrate superior proficiency in original research and familiarity with current advances in one of the main areas of chemistry.

Residence Requirement

The residence requirement is satisfied after one year of full-time graduate work or two years of half-time work. If a student holds a teaching assistantship that occupies one half of the student's time, the residence requirement is discharged at half rate. Other arrangements require faculty approval. If a candidate has a research fellowship that supports the research for the doctoral dissertation, the residence requirement is discharged at full rate. Normally, the equivalent of two years of work after establishment of doctoral candidacy is necessary to complete research.

Degree Candidacy

Degree candidacy is established in accordance with the general Graduate School of Arts and Sciences regulations.

Qualifying Examinations

Qualifying examinations are offered in the fields of analytical, inorganic, organic, and physical chemistry. There are eight examinations offered each year in each field. Students are required to pass four of these examinations in their declared field of study.

A student is eligible to take the qualifying examinations if:

1. The student has entered with a bachelor's degree has achieved a 3.00 quality point average in eight courses taken in the first year of residence, as described in the MS Thesis Program above. *No more than five of these courses may be within any one area of concentration if the student wishes to be in the PhD program.* Two of the eight graduate courses may be in physics, mathematics, and biochemistry; the remaining courses must be numbered between CHM 3521 and CHM 3699.
2. The student has been admitted to the doctoral program with an awarded master's degree.

3. The student is a part-time student who has petitioned the department after having completed at least sixteen quarter hours of credit in graduate courses, including fulfillment of three of the four distributional requirements listed for the part-time program. A 3.00 cumulative average is required for all courses taken.

Students in category 1 must pass the qualifying examinations by July 1 of their second year of residence. Students in category 2 must pass the qualifying examinations by July 1 of their first year of residence. Students in category 3 will have the conditions set at the time their petition is approved.

Course Requirements

A candidate is normally required to complete some coursework beyond the forty-quarter-hour minimum. The number and nature of these courses are individually determined for each candidate in consultation with the dissertation advisor.

Dissertation

In most cases, arrangements for a dissertation advisor will have been made before the completion of the qualifying examinations. If not, such arrangements must be made as soon as possible after degree candidacy has been established. The dissertation advisor directs the research for the dissertation and serves as chairperson of the dissertation committee, which must approve the dissertation before the degree may be conferred.

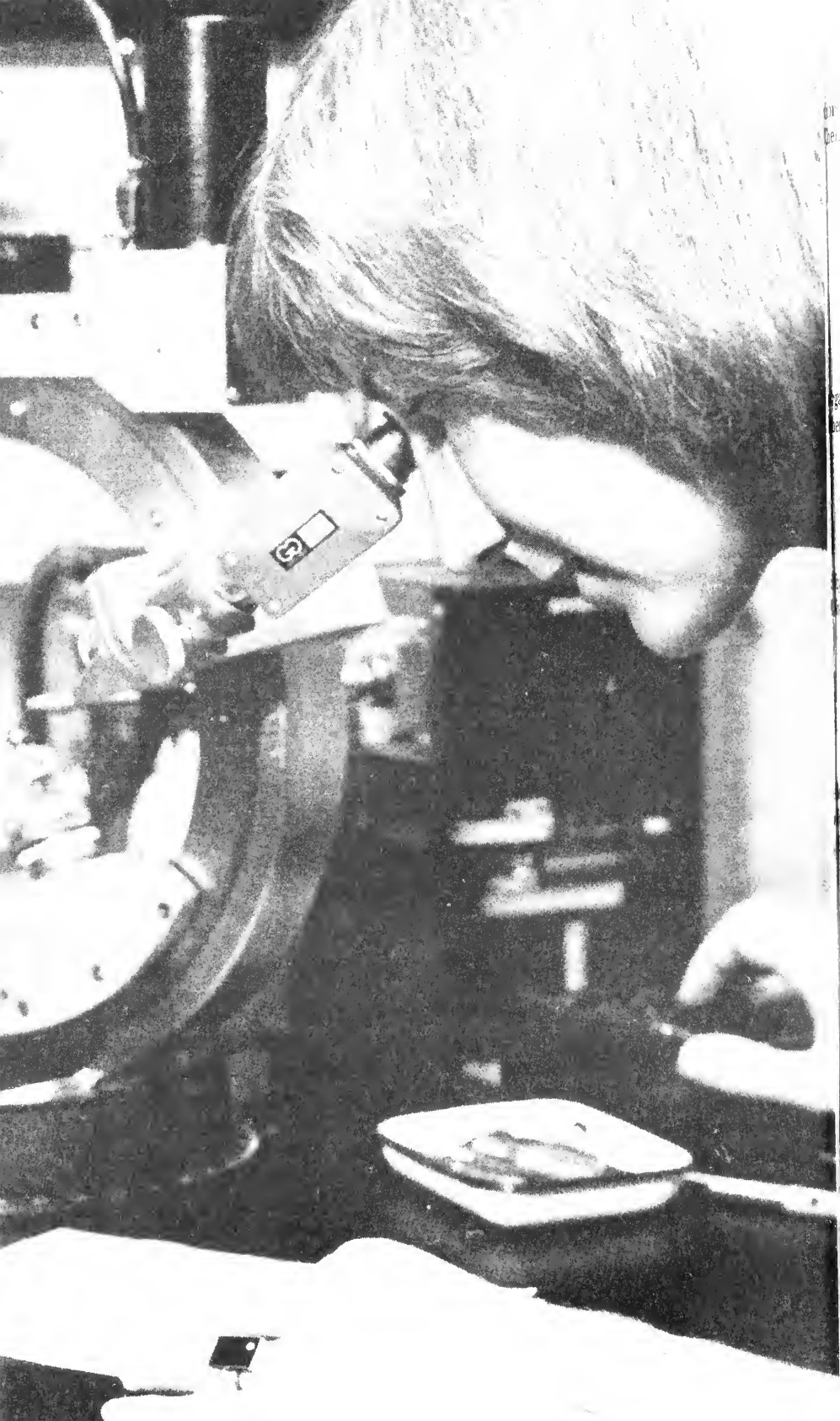
Final Oral Examination

This examination will be held in accordance with the Graduate School regulations.

Areas of Advanced Study and Research

Analytical Chemistry

There is a major research effort in bioanalytical chemistry which includes chromatographic and electrophoretic separations of biopolymers and analyses of biological samples by mass spectrometry and liquid chromatography/mass spectrometry. Other areas include the development of novel detectors and derivitization techniques for liquid chromatography, the development and characterization of new ionization sources for mass spectrometry and new excitation sour-



ces for emission spectroscopy, and methods development in environmental, clinical and forensic analysis.

organic chemistry

Research in solid state emphasizes the synthesis and characterization of new ceramics and alloys, high-Tc superconductors, amorphous metals, and nitrides by plasma (ion) reaction; and Mössbauer studies of a wide variety of metal-containing species. In the solution area, catalytic properties of the coordination complexes of transition metals are a focus of activity; as well as some mechanistic aspects of organometallic rearrangements, and the preparation of novel polysilane polymers.

organic chemistry

Research in the organic chemistry division encompasses the areas of organic synthesis, synthetic methodology, organic reaction mechanisms, carbocationic species, unstable species, reactive intermediates, strained ring compounds, organolithiums, natural products, phytochemistry, and chemical ecology.

physical chemistry

The physical chemistry division has active research programs in the areas of photophysics, fluorescence spectroscopy, solution and gas phase photochemistry, molecular spectroscopy, physical solid-state chemistry including x-ray diffraction, small molecule x-ray crystallography, and theoretical studies, especially of electron transfer and of atomic and molecular excited states.

research facilities and equipment

The main facilities of the department are located in Hurtig Hall. Substantial additional space and equipment are available in the Barnett Institute of Chemical Analysis and Materials Science in Mugar Hall. Major research equipment includes:

- Nuclear magnetic resonance, and mass spectrometers
- Liquid and gas chromatographs, capillary electrophoresis, and atomic emission and absorption spectrometers
- X-ray diffractometers, an electron microscope, and thermal analyzers and calorimeters
- Gouy and Faraday magnetic balances and a vibrating sample magnetometer
- Vacuum ultraviolet, photoionization, ultraviolet, visible, and infrared spectrometers
- Flash photolysis, laser photolysis, and photochemical equipment

- Mössbauer spectrometers and low temperature facilities
- Fluorescence emission and lifetime apparatus and a stopped-flow apparatus
- Electroanalytical, polarographic, and coulometric equipment

Interdisciplinary Graduate Chemistry Programs

Some graduate students wish to pursue doctoral programs that involve substantial work in two or more departments. The Chemistry Department has served as the registration department for a number of students engaged in such areas. The details of establishing such a program tailored to a student's individual needs are explained on page 32 of this catalog.

Master of Science With Concentration in Clinical Chemistry

A part-time interdisciplinary program offered in cooperation with the College of Pharmacy and Allied Health Professions, the master of science in medical laboratory science with concentration in clinical chemistry is designed to help prepare students for employment in clinical laboratories. Students must apply for this program through the College of Pharmacy and Allied Health Professions. Details are given below.

Master of Science Degree Program in Medical Laboratory Science with Concentration in Clinical Chemistry (Part-Time Program)

Admission

Students applying to the biomedical science programs should have an undergraduate background that includes the following areas: mathematics, including calculus; one or two years of biology; one year of physics and organic chemistry (some physical chemistry is highly desirable). Students may enter this program from a

variety of backgrounds and orientations, ranging from undergraduate study of pharmacy or medical laboratory science to undergraduate study of biology or chemistry.

This is an interdisciplinary program. Applications should be directed to the Graduate School of Pharmacy and Allied Health Professions.

rogram

Forty quarter hours of academic coursework is required for the Master of Science degree program in Medical Laboratory Science with clinical chemistry concentration.

Professional
Requirement
(S only)

Students must write, or be eligible to write, the examination in medical technology, in one of categorical or specialist certifications of the Board of Registry of the American Society of Clinical Pathologists, or the National Certification Agency for Medical Laboratory Personnel, or the examination by the National Board of Clinical Chemistry.

Course Listings

The following is a listing of all departmental course offerings. Please refer to the *Graduate Schools Course Descriptions* for course descriptions and relevant prerequisites.

Course No.	Course Name	Credit
CHM3231	Remedial Analytical Chemistry	1 QH
CHM3271	Remedial Organic Chemistry I	1 QH
CHM3272	Remedial Organic Chemistry II	1 QH
CHM3273	Remedial Organic Chemistry III	1 QH
CHM3381	Remedial Physical Chemistry I	1 QH
CHM3382	Remedial Physical Chemistry II	1 QH
CHM3383	Remedial Physical Chemistry III	1 QH
CHM3431	Remedial Instrumental Analysis	1 QH
CHM3441	Remedial Inorganic Chemistry	1 QH
CHM3461	Remedial Identification of Organic Compounds	1 QH
CHM3510	Special Projects in Chemistry	2 QH
CHM3521	Analytical Separations	2 QH
CHM3522	Advanced Analytical Separations	2 QH
CHM3523	Electroanalytical Chemistry I	2 QH
CHM3524	Electroanalytical Chemistry II	2 QH
CHM3525	Optical Methods of Analysis I	2 QH
CHM3526	Optical Methods of Analysis II	2 QH
CHM3527	Analytical & Organic Mass Spectrometry	2 QH
CHM3529	Chemical Instrumentation I: Measurements and Control	2 QH

CHM3530	Chemical Instrumentation II: Computer Interfacing	20
CHM3531	Special Topics in Analytical Chemistry I	20
CHM3532	Special Topics in Analytical Chemistry II	20
CHM3541	Advanced Inorganic Chemistry I	20
CHM3542	Advanced Inorganic Chemistry II	20
CHM3543	Advanced Inorganic Chemistry III	20
CHM3561	Advanced Organic Chemistry I	20
CHM3562	Advanced Organic Chemistry II	20
CHM3563	Physical Organic Chemistry	20
CHM3564	Spectrometric Identification of Organic Compounds	20
CHM3581	Chemical Thermodynamics I	20
CHM3582	Chemical Thermodynamics II	20
CHM3583	Chemical Thermodynamics III	20
CHM3591	Introductory Quantum Chemistry I	20
CHM3592	Introductory Quantum Chemistry II	20
CHM3593	Introductory Quantum Chemistry III	20
CHM3594	Chemical Kinetics	20
CHM3641	Coordination Chemistry	20
CHM3642	Special Topics in Inorganic Chemistry I	20
CHM3643	Special Topics in Inorganic Chemistry II	20
CHM3644	Special Topics in Inorganic Chemistry III	20
CHM3645	Special Topics in Inorganic Chemistry IV	20
CHM3661	Organic Stereochemistry and Reaction Mechanisms I	20
CHM3662	Organic Stereochemistry and Reaction Mechanisms II	20
CHM3663	Organic Reaction Mechanisms & Organic Synthesis I	20
CHM3664	Organic Reaction Mechanisms & Organic Synthesis II	20
CHM3671	Special Topics in Organic Chemistry I	20
CHM3672	Special Topics in Organic Chemistry II	20
CHM3673	Special Topics in Organic Chemistry III	20
CHM3681	Special Topics in Physical Chemistry I	20
CHM3682	Special Topics in Physical Chemistry II	20
CHM3683	Special Topics in Physical Chemistry III	20
CHM3800	Analytical Seminar	1
CHM3801	Inorganic Seminar	1
CHM3802	Organic Seminar	1
CHM3803	Physical Seminar	1
CHM3810	Research for MS	6
CHM3820	Research & Dissertation for PhD	0
CHM3798	Master's Thesis Continuation	0
CHM3799	Doctoral Dissertation Continuation	0

Economics

Economics studies how societies produce and distribute goods and services and how income and wealth are distributed. Economists develop techniques that help identify and analyze society's problems and recommend alternative solutions, when needed. The relevance of economic skills is evidenced by the employment of economists in large numbers by government agencies and business firms, as well as by academic institutions.

Economics is both a theoretical and an applied social science. The Economics Department offers courses and programs that require students to apply economic theory to relevant social problems. Areas in which the department specializes include public policy and economic planning, labor economics and manpower planning, urban and regional economics, development economics, public finance and monetary theory and finance.

The Economics Department offers three programs with different admissions requirements and program form and content, in an effort to serve students with varying backgrounds, interests, and goals. These programs include an MS degree program in economic policy and planning, an MA degree program with specialization in one of four available fields, and a doctoral degree program.

Professors

Morris A. Horowitz, PhD, *Harvard University*,
Chairperson

Conrad P. Caligaris, PhD, *Brown University*

Harold M. Goldstein, PhD, *Clark University*

Irwin L. Herrnstadt, PhD, *Massachusetts Institute of Technology*

Sungwoo Kim, PhD, *University of California, Berkeley*

Gustav Schachter, PhD, *New York University*

Andrew Sum, MA, *Massachusetts Institute of Technology*

Associate Professors

Neil Alper, PhD, *University of Pittsburgh*

Bruce Bolnick, PhD, *Yale University*

Oscar Brookins, PhD, *State University of New York, Buffalo*

Kamran Dadkhah, PhD, *Indiana University*

Alan W. Dyer, PhD, *University of Maryland*

Barbara Fraumeni, PhD, *Boston College*

Steven A. Morrison, PhD, *University of California, Berkeley*

Gregory H. Wassall, PhD, *Rutgers University*

Assistant Professors

M. Shahid Alam, PhD, *University of Western Ontario*

Gopa Chowdhury-Bose, PhD, *London School of Economics*

Jonathan H. Haughton, PhD, *Harvard University*

Teh M. Huo, PhD, *University of Rochester*

Manfred W. Keil, PhD, *London School of Economics*

Fred K. Luk, PhD, *University of California, Los Angeles*

George A. Plesko, PhD, *University of Wisconsin*

Research

The primary focus of research efforts by Economics Department members is on applying theory to contemporary problems. Recent research projects conducted by department members have included assistance in the development of small enterprises in Indonesia; development of a multi-regional input-output model of Italy; analysis of the welfare effects of airline deregulation; evaluation of the effectiveness of federally funded employment and training programs; and estimation of factors that lead to financial success for artists.

Research in the department is facilitated by the department's own library, housing a collection of over 1,300 reference books and journals, and by the existence of several research centers within the department. Specifically, the Center for European Economic Studies, the Center for Labor Market Studies, the Center for Medical Manpower Studies, and the Center for Urban and Regional Economic Studies are all headquartered within the Economics Department. Also, computer hardware and software facilities are readily available, with six live terminals connected to the University computer for research use.

Economics faculty are active in disseminating the results of their research. Articles authored by economics faculty have appeared in virtually every major journal in the field.

The Master of Science Degree in Economic Policy and Planning

Forty-one quarter hours of academic work are required. The program consists of twenty-three quarter hours of required courses and eighteen quarter hours of electives. With the approval of the student's advisor, a student may select a maximum of six quarter hours from graduate courses offered by other departments. This is a terminal degree program designed mainly for working economists, government agency officials, and planners and managers in the private sector.

Admission

Applicants must meet the general admissions regulations of the Graduate School of Arts and Sciences. Admission is only possible in the fall and winter quarters. Applications for admission to the fall quarter will be given consideration if received by July 31. Applications for admission to the winter quarter will be given consideration if received by October 31.

Applications for financial aid should be submitted no later than March 15. See page 168 for information on available financial aid.

Comprehensive Examination

After completion of courses, a comprehensive examination is required of all students, to test their ability to apply concepts and tools in the broad field of economic policy and planning. The examination may be repeated only once.

Master's Thesis

A master's thesis for a maximum of six quarter hours of credit is optional with the approval of the graduate director.

Course Requirements

Required Core Courses

Course No.	Course Name	Credit
ECN 3110	Introduction to Microeconomic Theory	4 QH
ECN 3120	Introduction to Macroeconomic Theory	4 QH
ECN 3140	Introduction to Statistics	4 QH
ECN 3150	Microeconomic Policy and Planning Seminar	4 QH
ECN 3151	Macroeconomic Policy and Planning Seminar	4 QH
ECN 3152	Workshop in Economic Planning & Policy	3 QH

Students must receive a grade of B- or higher in all core courses. If a lower grade is received, the course must be repeated (keeping in mind the Graduate School regulation that only six quarter hours or two courses,

whichever is greater, may be repeated in order to satisfy requirements for the degree).

Elective Courses

A total of eighteen quarter hours of electives (twelve quarter hours of which must be economics courses) may be selected by the student in accordance with interests and needs. Electives may be concentrated in any of the available areas or may be distributed among fields to obtain a broader exposure. A maximum of six quarter hours of credit for courses taken at other institutions may be accepted if taken during the past seven years.

The Master of Arts Degree

Forty quarter hours of academic work are required. This program comprises sixteen quarter hours of required core coursework and twenty-four quarter hours of electives, of which a minimum of twelve quarter hours must be selected from one of the economic fields listed below. The required core courses must be completed as soon as possible. With the prior approval of the graduate director, a student may select a maximum of six quarter hours from graduate courses offered by other departments or two advanced undergraduate courses in economics carrying three quarter hours of graduate credit each.

Admission

In addition to the general admissions requirements of the Graduate School of Arts and Sciences, applicants should have had a minimum of twelve semester hours of economics (or the equivalent), of which three semester hours (or the equivalent) should be statistics. Students without previous economics training may be admitted to the program but will be required to make up deficiencies in economic theory and statistics (see under Required Courses). Admission is only possible in the fall and winter quarters. Applications for admission to the fall quarter will be given consideration if received by July 31. Applications for admission to the winter quarter will be given consideration if received by October 31.

Applications for financial aid should be submitted no later than March 15. See page 168 for information on available financial aid.

Comprehensive Examination

A comprehensive examination in the student's chosen field of concentration, which will be held in accordance with the general Graduate School regulations, must be taken by all students upon completion of their required field coursework. The examination may be repeated only once.

Master's Thesis

A master's thesis for six quarter hours of credit is optional with the approval of the graduate advisor. Approval will be granted only in those instances in which a student's previous graduate work indicates capacity for independent study.

Required Core Courses

The following are required core courses:*

Course No.	Course Name	Credit
ECN 3210	Microeconomic Theory I**	4 QH
ECN 3220	Macroeconomic Theory I**	4 QH
ECN 3240	Statistical Inference***	4 QH
ECN 3241	Econometrics I	4 QH

**Students must demonstrate competence in mathematics by taking a mathematics examination given by the department during registration week prior to the start of the fall quarter. Students must pass this examination or satisfactorily complete ECN 3030, Introduction to Mathematics for Economists.*

***Candidates deficient in intermediate theory may not be admitted into these core courses until they have completed ECN 3010, Introduction to Microeconomic Theory, and/or ECN 3020, Introduction to Macroeconomic Theory.*

****Students may meet the prerequisite for this course by passing a statistics examination given by the department during registration week prior to the start of the fall or winter term or by satisfactory completion of ECN 3040, Introduction to Statistics.*

Students may not receive more than one C grade in the core courses. If more than one C is earned, those courses must be repeated and a grade of at least a B- must be obtained (keeping in mind the Graduate School regulation that only six quarter hours or two courses, whichever is greater, may be repeated in order to satisfy requirements for the degree).

Economic Fields

Available economic fields are listed below. Under each field are stated the required field courses and the elective field courses. Students must take at least twelve quarter hours in one field of concentration. In all

fields, the first listed required course in the field ordinarily should be taken first by the student majoring in the field. For students not majoring in the field, courses in the field may be taken in any sequence.

Manpower Economics

Required field courses:

- ECN 3350 Economics of the Labor Market and Labor Force I
- ECN 3352 Economics of Manpower Planning I
- ECN 3359 Seminar in Human Resource Development

Elective field courses:

- ECN 3351 Economics of the Labor Market and Labor Force II
- ECN 3353 Economics of Manpower Planning II
- ECN 3354 Economics of Medical Care & Health Manpower
- ECN 3355 Economics of Human Capital
- ECN 3356 Local Labor Market Research Methods & Problems

Urban/Regional Economics

Required field courses:

- ECN 3360 Regional Economics
- ECN 3363 Urban Economic Systems
- ECN 3364 Urban Economic Development

Elective field courses:

- ECN 3366 Economics of Transportation
- ECN 3371 Regional Development
- ECN 3383 Intergovernment Finance

Development Economics

Required field courses:

- ECN 3370 Economic Development
- ECN 3371 Regional Development
- ECN 3379 Development Planning Seminar

Elective field courses:

- ECN 3352 Economics of Manpower Planning I
- ECN 3360 Regional Economics
- ECN 3372 Comparative Economic Development
- ECN 3373 Development Finance
- ECN 3375 International Trade and Finance

Public Finance

Required field courses:

- ECN 3390 Public Finance Theory I
- ECN 3391 Public Finance Theory II
- ECN 3392 Public Policy and Finance

Elective field courses:

- ECN 3373 Development Finance
- ECN 3375 International Trade and Finance
- ECN 3379 Development Planning
- ECN 3381 Monetary Policy
- ECN 3399 Seminar in Public Finance

Economics of Money and Finance

Required field courses:

ECN 3380	Monetary Theory
ECN 3381	Monetary Policy
ECN 3389	Money Credit Banking Seminar

Elective field courses:

ECN 3373	Development Finance
ECN 3375	International Trade and Finance
ECN 3384	Capital Markets
ECN 3390	Public Finance Theory I
ECN 3392	Public Policy and Finance

The Doctor of Philosophy Degree

The doctoral degree program in economics is offered with concentrations in the fields of manpower economics, urban/regional economics, development economics, monetary economics and public finance.

Admission

Applicants who will have a master's degree in economics or its equivalent at entry may be considered for direct admission to the doctoral program. Applicants who will not have a master's degree in economics or its equivalent at entry may apply for admission to the doctoral program but must satisfactorily complete an additional forty quarter hours of graduate work equivalent to a master's degree. Such students should submit the Graduate Record Examination (GRE) scores if available.

Admission to the doctoral program is possible only in the fall quarter. Applications for the doctoral program must be submitted no later than July 31. Applications for financial aid should be submitted not later than March 15. See page 168 for information on available financial aid.

Residence Requirement

After acceptance to the doctoral program, the student may satisfy the residence requirement by one year of full-time graduate coursework. Teaching assistants may satisfy the residence requirement by two consecutive years of half-time graduate coursework. A student should expect to spend at least two academic years in full-time study (or its equivalent) in completing the requirements for the doctoral degree.

Degree Candidacy

Degree candidacy is established in accordance with the general Graduate School regulations.

Course Requirements

At least thirty-six quarter hours of graduate work beyond the master's degree is required. The required core courses are:

ECN 3510	Microeconomic Theory II	4 Q
ECN 3520	Macroeconomic Theory II	4 Q
ECN 3530	Mathematics for Economists	4 Q
ECN 3540	Econometrics II	4 Q

Concentration is required in one academic field. Course-work in the field must include the doctoral seminar sequence ECN 3601 and ECN 3602. This seminar has a prerequisite of twelve quarter hours of graduate course-work in the field.

Students must maintain a 3.000 cumulative average in the four core courses plus the two doctoral seminars. In addition, an overall 3.000 cumulative average must be maintained. Not more than two courses or six quarter hours of credit, whichever is greater, may be repeated in order to satisfy the requirements for the degree. Only such repeats will be counted in calculating the cumulative average requirement. Students entering the PhD program directly from the Bachelor's level are subject to the MA program grade requirements while taking Master's level courses.

Qualifying Examinations

Each student must pass comprehensive qualifying examinations after the completion of the required core and field courses. These examinations include: (1) a three-hour written examination in macroeconomic theory; (2) a three-hour written examination in microeconomic theory; (3) a three-hour written examination in econometrics; and (4) a three-hour written examination in one doctoral field. The macroeconomic theory and microeconomic theory examinations must be taken no later than the Fall of the student's second year in the program. The econometrics and field examinations must be taken no later than the Fall of the student's third year in the program. No qualifying examination may be taken until all required coursework in the field tested by the examination has been completed. An examination may be repeated only once.

Doctoral Dissertation

An original doctoral dissertation is required of all students in accordance with the general Graduate School regulations and the regulations established by the department. After the successful completion of the qualifying examinations, students are expected to work

with dissertation advisors, under whose guidance they write the doctoral dissertation. Once a dissertation topic and committee have been chosen, the doctoral candidate must present the topic to a seminar of graduate faculty. The dissertation advisor serves as chairperson of the dissertation committee, which must approve the dissertation before the degree may be conferred.

The final oral examination is established in accordance with the general Graduate School regulations.

Course Listings

The following is a listing of all departmental course offerings. Please refer to the *Graduate School Course Descriptions* for course descriptions and relevant prerequisites.

CourseNo.	Course Name	Credit
ECN 3005	General Economics	0 QH
ECN 3010	Introduction to Microeconomic Theory	0 QH
ECN 3020	Introduction to Macroeconomic Theory	0 QH
ECN 3030	Introduction to Mathematics for Economists	0 QH
ECN 3040	Introduction to Statistics	0 QH
ECN 3110	Introduction to Microeconomic Theory	4 QH
ECN 3120	Introduction to Macroeconomic Theory	4 QH
ECN 3130	Introduction to Mathematics for Economists	3 QH
ECN 3140	Introduction to Statistics	4 QH
ECN 3150	Microeconomic Policy Planning Seminar	4 QH
ECN 3151	Macroeconomic Policy Planning Seminar	4 QH
ECN 3152	Workshop in Economic Planning & Policy	3 QH
ECN 3210	Microeconomic Theory I	4 QH
ECN 3220	Macroeconomic Theory I	4 QH
ECN 3230	History of Economic Thought	4 QH
ECN 3240	Statistical Inference	4 QH
ECN 3241	Econometrics I	4 QH
ECN 3310	Case Studies in Applied Microeconomics	3 QH
ECN 3315	Economics of Law and Public Policy	3 QH
ECN 3330	Economic Programming	3 QH
ECN 3332	Computers in Economic Research	3 QH
ECN 3350	Economics of the Labor Market and Labor Force I	3 QH
ECN 3351	Economics of the Labor Market and Labor Force II	3 QH
ECN 3352	Economics of Manpower Planning I	3 QH
ECN 3353	Economics of Manpower Planning II	3 QH
ECN 3354	Economics of Medical Care & Health Manpower	3 QH
ECN 3355	Economics of Human Capital	3 QH
ECN 3356	Local Labor Market Research Methods & Problems	3 QH
ECN 3359	Seminar in Human Resource Development	3 QH

ECN 3360	Regional Economics	3 Q
ECN 3362	Economics of Crime	3 Q
ECN 3363	Urban Economic Systems	3 Q
ECN 3364	Urban Economic Development	3 Q
ECN 3366	Economics of Transportation	3 Q
ECN 3369	Urban Regional Economics Seminar	3 Q
ECN 3370	Economic Development Theory	3 Q
ECN 3371	Regional Development	3 Q
ECN 3372	Comparative Economic Development	3 Q
ECN 3373	Development Finance	3 Q
ECN 3374	Comparative Economic and Business Practice	3 Q
ECN 3375	International Trade and Finance	3 Q
ECN 3379	Development Planning Seminar	3 Q
ECN 3380	Monetary Theory	3 Q
ECN 3381	Monetary Policy	3 Q
ECN 3384	Capital Markets	3 Q
ECN 3389	Money Credit Banking Seminar	3 Q
ECN 3390	Public Finance Theory I	3 Q
ECN 3391	Public Finance Theory II	3 Q
ECN 3392	Public Policy and Finance	3 Q
ECN 3399	Seminar in Public Finance	3 Q
ECN 3510	Microeconomic Theory II	4 Q
ECN 3520	Macroeconomic Theory II	4 Q
ECN 3530	Mathematics for Economics	4 Q
ECN 3540	Econometrics II	4 Q
ECN 3601	Doctoral Research Seminar I	4 Q
ECN 3602	Doctoral Research Seminar II	4 Q
ECN 3850	Internship in Economics	1 Q
ECN 3851	Internship in Economics	2 Q
ECN 3852	Internship in Economics	3 Q
ECN 3870	Readings in Economics (Master's)	1 Q
ECN 3871	Readings in Economics (Master's)	2 Q
ECN 3872	Readings in Economics (Master's)	3 Q
ECN 3873	Readings in Economics (Master's)	4 Q
ECN 3874	Readings in Economics (Master's)	5 Q
ECN 3875	Readings in Economics (Master's)	6 Q
ECN 3880	Readings in Economics (PhD)	1 Q
ECN 3881	Readings in Economics (PhD)	2 Q
ECN 3882	Readings in Economics (PhD)	3 Q
ECN 3883	Readings in Economics (PhD)	4 Q
ECN 3884	Readings in Economics (PhD)	5 Q
ECN 3885	Readings in Economics (PhD)	6 Q
ECN 3890	Master's Thesis Seminar	Maximum 6 Q
ECN 3899	Doctoral Dissertation Seminar	0 Q
ECN 3798	Master's Thesis Continuation	0 Q
ECN 3799	Doctoral Dissertation Continuation	0 Q

English

The graduate program in English engages many of the theoretical and applied issues generated by the study of literature and language--literary history and theory; linguistics, with particular application to stylistics and the teaching of writing; creative writing; technical and professional writing; and composition studies. Graduate study takes full advantage of the rich opportunities offered by Boston's museums and libraries.

The Department of English offers a range of programs. The Master of Arts includes the Program in Literature, which provides the opportunity for training in research and in theory as preparation for a career as a scholar and teacher of literature, as well as the Program in Writing, which provides theoretical and practical preparation in creative writing and in the teaching of writing. The Certificate of Advanced Graduate Study provides post-master's work in these same areas. The Master of Technical and Professional Writing offers the opportunity for graduate training for a career as a professional writer in industry, science, or government. The Martha's Vineyard Institute on Writing and the Master of Arts degree program in Writing associated with the Vineyard Institute offer advanced training in writing and its teaching.

Professors

Kinley E. Roby, PhD, *Pennsylvania State University*,
Chairperson

Samuel J. Bernstein, PhD, *Brandeis University*

Robert J. Blanch, PhD, *State University of New York*,
Buffalo

Francis C. Blessington, PhD, *Brown University*

Irene R. Fairley, PhD, *Harvard University*

Gary Goshgarian, PhD, *University of Wisconsin*

Earl N. Harbert, PhD, *University of Wisconsin*

M. X. Lesser, PhD, *Columbia University*

James Nagel, PhD, *Pennsylvania State University*

Guy Rotella, PhD, *Boston College*

Herbert L. Sussman, PhD, *Harvard University*

Arthur J. Weitzman, PhD, *New York University*

Paul C. Wermuth, PhD, *Pennsylvania State University*

Joseph E. Westlund, PhD, *University of California, Berkeley*

Associate Professors

Timothy R. Donovan, PhD, *University of Wisconsin*

Maryemma Graham, PhD, *Cornell University*

Gerald R. Griffin, PhD, *University of Massachusetts*

Stuart S. Peterfreund, PhD, *University of Washington*

Janet Randall, PhD, *University of Massachusetts*

Michael Ryan, PhD, *University of Iowa*

Kristin Woolever, PhD, *University of Pittsburgh*

Assistant Professors

Mary Loeffelholz, PhD, *Yale University*

Joyce Scott, EdD, *Boston University*

Henrietta Shirk, PhD, *Bryn Mawr College*

Charles H. Sides, PhD, *University of Massachusetts*

Susan Wall, PhD, *University of Pittsburgh*

Research

The faculty carries on an active program of research and writing reflecting the varied interests of the department--in literary studies and critical theory, in the writing of both poetry and fiction, and in the theory and practice of composition and of technical and professional writing. Graduate students work as editorial assistants for journals published by the department: *Nineteenth-Century Contexts* and *Studies in American Fiction*.

Admission

For application procedures and requirements, please consult page 21. Applications for teaching assistantships must be received by March 15th for the following Fall quarter. Applicants are judged favorably if they do superior work in their undergraduate preparation. Two recommendations should be submitted by professors familiar with the student's work in literature and writing. The Test of English as a Foreign Language (TOEFL) examination must be taken by international students. A sample of academic or professional writing is required of all applicants. GRE's are recommended, but not required.

The category of special student is provided for the non-degree students who wish to take an individual course or those already enrolled in a graduate program in another institution who wish to transfer credit. An applicant already holding a graduate degree may also enroll as a special student.

The Master of Arts Degree in English

Core Curriculum

All students earning the MA in English must take:

Research Methods (non-credit course)
ENG 3300 Introduction to Critical Issues
One course in American literature
One course in British literature

All students earning the MA must take the MA comprehensive examination.

All students in this program must take a total of fourteen courses (forty-two quarter hours of credit).

Students must elect to complete the requirements of either the Program in Literature or the Program in Writing.

Students planning to do doctoral work are encouraged to take ENG 3302, Bibliography and Research Methods (which will be offered in alternate years) and an advanced course in critical theory. Students are also encouraged to take courses in those historical periods in which they have little preparation.

Program in Literature

In addition to the core requirements, one course in each of the following groups is required of all students in this program (courses may be in British or American):

1. Medieval through early Renaissance (to 1600, including Shakespeare)
2. 17th Century (including Milton) / Restoration / 18th Century (including Early American Literature)
3. 19th Century / 20th Century
4. Literary Studies / Linguistics

Students are encouraged to satisfy these basic requirements as part of an individual program of study developed in consultation with the student's faculty advisor.

Sample Programs:

Focus in American Literature: Early American (one course); 19th Century (one course); 20th Century (one course); American electives (two courses)

Focus in British Literature: Medieval through Early Renaissance (one course); 17th Century / 18th Century (one course); 19th Century (one course); British electives (one course)

Focus in Literary Studies: Critical Theory (two courses); Linguistics (one course); Literary Studies (two courses)

Focus in Literature and Writing: Linguistics (one course); Writing Theory (two courses); Writing Practice (two courses)

Focus in Literature and Linguistics: Linguistics (two courses); Literary Studies (one course); American or British Literature (two courses)

Comprehensive Exam: Students in the Program in Literature must answer two questions in British and/or American, only one of which may be on a Special Work; one question in Literary Studies or designated questions in linguistics from Linguistics and Writing; one elective.

Program in Writing

In addition to the core requirements, one course in each of the following groups is required of all students in the program:

1. Linguistics
2. Writing Theory (e.g., Composition Studies, Topics in Writing, Rhetoric)
3. Writing Practice (e.g., Creative Writing, Technical Writing)

One additional course from one of the groups above.

Students are encouraged to satisfy these basic requirements as part of an individual program of study developed in consultation with the student's faculty advisor

Sample Programs:

Focus in Linguistics and Writing: Linguistics (two courses); Composition Studies (two courses); Writing Practice (one course)

Focus in Creative Writing and Composition: Creative Writing (two courses); Composition Studies (two courses); Linguistics (one course)

Focus in Literature and Linguistics: Linguistics (three courses); Literary Studies or Critical Theory (two courses)

Focus in Writing and Literature: Medieval through Early Renaissance (one course); 17th Century / Restoration / 18th Century (one course); Literary Studies (one course)

Comprehensive Examination: Students in the Program in Writing must answer two questions in Linguistics and Writing; two electives

Transfer Credit

A student may transfer from another institution no more than twelve quarter hours (nine semester hours) of graduate credit in English. Within this limit, graduate courses in other fields may also be transferred if their relevance to the student's program can be demonstrated. Please refer to the section on transfer credit on page 30 for full details.

Thesis

A thesis is optional. A student wishing to write a master's thesis must secure the approval of the chairperson of the graduate committee and must write the thesis under the supervision of a faculty advisor. Six quarter hours of credit in lieu of coursework is allowed. The student must enroll in ENG 3601, Thesis, to obtain credit.

Directed Study

A student may apply for a maximum of six quarter hours of directed study, not including a thesis.

Students must obtain the written consent of the instructor who will direct the study. A course proposal must be developed, outlining the works to be covered, the general requirements to be met, and the quarter hours of credit for which the study is offered. Such a proposal must be submitted for approval to the student's faculty advisor and to the Chair of the Graduate Committee.

Directed study is not permitted when a course in the same subject is offered during the academic year. Directed study should not substitute for regular course offerings.

Comprehensive Examination

A five-hour comprehensive examination, given during the spring quarter, is required. The examination is divided into four areas: British Literature; American Literature; Literary Studies (including such subjects as

critical theory, themes, genre studies); Linguistics and Writing (including such subjects as linguistics, composition studies). Copies of previous examinations are available in the departmental office. A student must accrue thirty quarter hours of credit with an average of 3.000 or higher before being eligible to take the examination. The examination may be taken only twice. Students may choose an oral examination in lieu of the written comprehensive. Students who wish to pursue this option must arrange to do so through the graduate committee chairperson.

Language Requirement

A degree candidate for the MA degree program in English must demonstrate proficiency in a language other than English. This may be done by passing a reading examination or by presenting evidence of B work in at least two intermediate-level reading courses. The languages normally used to fulfill the requirement are: Latin, Greek, Hebrew, German, French, Spanish, and Italian. Students wishing to satisfy the requirement in a language other than these must petition the Graduate Committee for permission to do so. Students for whom English is not the native language may petition to have proficiency in the native language count as satisfying the requirement.

Grades

To qualify for the comprehensive examination and for the degree, a student must achieve a minimum cumulative average of 3.000. Students who receive more than two C's in their first two quarters of residence may be dropped from the program. An incomplete grade is granted only in extraordinary circumstances and is not given automatically. Please refer to the section on grades on page 26.

Time Limitation

Course credits are valid for a maximum of seven years unless an extension is allowed by the director of the Graduate School of Arts and Sciences.

Financial Aid

Teaching assistantships are awarded on a competitive basis to a limited number of entering and continuing students. These assistantships provide both a waiver of tuition and a stipend. A teaching assistant takes a minimum of two courses each quarter, but he/she may take more with permission. Teaching assistants are expected to make satisfactory progress toward the degree. Applications for teaching assistantships must be received by March 15th.

Master of Technical and Professional Writing

The Master of Technical and Professional Writing provides graduate training for those who wish to become professional writers in industry, science, business, government, and related fields. Courses give students the opportunity to acquire writing, research, and editing skills; background in an appropriate area of science, technology, or business; education in rhetoric, communication theory, and linguistics; and other communication skills in graphic arts and speech communication.

Students must take a total of fourteen courses (forty-two quarter hours).

In place of the MA Comprehensive Examination, students complete a final project and a portfolio of professional writing, and defend it before a committee of graduate faculty from the English Department and faculty from the student's scientific, technical, or professional area of study. Whenever possible, we place students in internships in industry or on campus. Writing done in these internships can serve as all or part of the final project.

Students in the program are eligible for teaching assistantships, awarded on a competitive basis. These provide a waiver of tuition. A stipend is also given with the award in return for academic assistance in the department in areas directly related to teaching function.

Requirements

The fourteen required courses and electives listed below comprise the Master of Technical and Professional Writing. Of these, seven courses must be in writing, editing, communication theory, linguistics, and a final writing project. These seven courses are offered by the English Department. Students must also focus their study in a Professional Sequence. This sequence includes at least three courses in the science, technology, or profession for which the student plans to write. The Professional Sequence is tailored to each student's career goals.

General Policies

ENG 3354 Technical Writing and ENG 3348 Materials & Methods for Technical Writing should be completed by the end of the student's second quarter.

ENG 3369 Graphic Design for Technical Writers and ENG 3371 PASCAL for Technical Writers should be

taken before other courses in graphics or computer languages.

No more than three Northeastern undergraduate courses may be taken for graduate credit. This includes University College courses.

Only four courses (12 quarter hours credit) are transferable from outside of Northeastern University. These courses must be at the graduate level, with a final grade of at least B, and must not have been used for another degree.

To graduate, students must have at least a 3.000 cumulative average. This average indicates B-level work as a minimum requirement.

Course Requirements

ENG 3354 Technical Writing	
ENG 3348 Materials & Methods for Technical Writing	
ENG 3604 Independent Study: Final Project	9 C
Three courses in a professional sequence	9 C
Three courses in writing/editing	9 C
One linguistics course	3 C
One computer language	3 C
Three electives	9 C
(One elective must be an English course outside of technical writing/editing. The other two courses may be from other departments.)	
Fourteen courses total	42 C

Professional Sequence

Three graduate-level courses in *one* technical, scientific, professional, or literary area, for example, computer science, natural sciences (biology, chemistry, mathematics, physics), pharmacy or health sciences, engineering, or business administration. Other areas may be substituted by consent of an advisor from the graduate faculty. Courses must be graduate-level or upper-division undergraduate courses including graduate level work.

Final Project

The final project consists of three written parts and an oral defense. The major portion of the project is a document written for the professional world. Students should register for ENG 3604 (Final Project) during their final quarter of degree work.

Technical Writing Training Program

The Department of English offers a training program in technical writing for the computer industry, open to those holding at least a bachelor's degree in any discipline.

This full-time program leads to a graduate certificate of completion. Although no degree is awarded, the English courses carry full graduate credit. Emphasis is placed on professional placement.

mission

Candidates must submit undergraduate and graduate transcripts, three letters of recommendation from professors or supervisors familiar with their work, and professional or academic writing samples. Candidates should also have some familiarity with computers and at least the BASIC programming language.

rogram

This certificate program is designed to be completed in one academic year. Three intensive courses in computer science and three intensive courses in technical writing are required; they will be determined in advance by the program directors to reflect the rapid changes in computer technology. Computer coursework includes programming, operating systems, data structures and hardware. The writing courses include introductory technical communication, writing for the computer industry, and applied software writing. Students work closely with members of an advisory board from Boston area high-tech firms, and the program encourages on-site visits and "hands-on" experience with computer technology.

Certificate of Advanced Graduate Study

The Department of English offers a program of post-master's work in literary study designed for those people who already hold the master's degree. The program is designed for both full-time and part-time study. Teaching Assistantships are available to a limited number of entering and continuing students in the program.

mission

Applicants must have a master's degree in literature or writing and are expected to submit transcripts of undergraduate and graduate work.

Program

Each student will follow a specialized course of study built around his/her own needs and designed in close association with a faculty advisor. The student must develop the outline of this program by the end of the first quarter of work at Northeastern and follow the program, under the supervision of the advisor, throughout his/her work at Northeastern. Forty-two quarter hours of work are needed to complete the program. It is expected that at least one of these courses will be ENG 3603 Independent Study, CAGS. With permission of the advisor, the student may take up to three graduate courses in other departments.

Examination

The student must pass an oral comprehensive examination and be evaluated on a lecture/classroom presentation, each to be based on the student's specialized program of study.

The Institute on Writing and Teaching

The Department of English offers a series of courses in writing and the teaching of writing that are held during July at the retreat setting of Martha's Vineyard. The graduate courses are intended primarily for teachers at elementary through college levels. In addition to English Department faculty, leading researchers from other universities are invited to teach the courses in the Institute.

Classes meet during two-week sessions, with additional assignments required prior to and after the sessions.

Master of Arts Degree in Writing

This degree is offered through the English Department's Institute on Writing and Teaching. It provides a thorough background in the theory, practice, and teaching of writing.

All courses for completing the degree are offered at Martha's Vineyard, though some English courses given on the Boston campus may be applied to the program. Coursework for the degree may be completed in as few as three to four summers, combining intensive two-

week sessions with writing and research projects conducted during the year.

Students must take a total of forty-two quarter hours:

1. Eight core courses	21 QH
ENG 3380 Prose Writing I	3 QH
ENG 3381 Prose Writing II	3 QH
ENG 3382 Responding to Writing	3 QH
ENG 3383 The Composing Process	3 QH
ENG 3392 Case Study Design	2 QH
ENG 3391 Field Work	3 QH
ENG 3602 Independent Study	3 QH
ENG 3389 Case Study Analysis	1 QH
2. Five elective courses	15 QH
ENG 3309 Writing and Learning Across the Curriculum	
ENG 3310 Writing Programs in Schools and Colleges	
ENG 3313 Theory and Teaching of Writing	
ENG 3314 Writing and Reading: Composing Processes	
ENG 3353 Topics in Writing	
ENG 3357 Computers and Writing	
ENG 3359 Writing Workshop	
ENG 3384 Rhetorical Theory	
ENG 3385 Writing About Literature & Other Disciplines	
ENG 3386 Research in Composition	
ENG 3602 Independent Study	

There are no foreign language requirements for this degree. No residency requirements pertain other than for summer sessions on the Vineyard. Courses in writing and the teaching of writing *only* may be transferred up to 12 credits.

3. A Master's Thesis (in place of a comprehensive exam). Candidates for the degree should enroll in ENG 3601, Thesis, for a maximum of six credits. The master's thesis should elaborate some aspects of writing and the teaching of writing, possibly expanding on research from previous coursework.

Certificate Program in Writing

The English Department also offers a non-degree Certificate through the Institute on Writing and Teaching that acknowledges the completion of thirty credit hours. The Certificate program is intended primarily for teachers, elementary through college level, who wish to document expertise in writing and the teaching

of writing but who may not want to pursue the MA in Writing. Applicants for admission to the Certificate program must fulfill the normal entrance requirement of the English Department and the Graduate School of Arts and Sciences as for the MA degree.

Candidates for the Certificate must take the eight core courses required in the MA (see above). In addition, candidates must take three courses from among the current electives in the program.

Course Listings

The following is a listing of all departmental course offerings. Please refer to the *Graduate Schools Course Descriptions* for course descriptions and relevant prerequisites.

All courses carry three quarter hours of credit unless otherwise specified. Courses indicated by "V" are normally given only through the Vineyard Program.

Course No.	Course Name	Cr
ENG 3300	Introduction to Critical Issues	
ENG 3302	Bibliography and Research Methods	
ENG 3308	Writing and Reading: Composing Processes	
ENG 3309	Writing and Learning Across the Curriculum V	6
ENG 3310	Writing Programs in Schools and Colleges V	
ENG 3311	English Prose Style	
ENG 3312	Composition Studies	
ENG 3313	Theory and Teaching of Writing	6
ENG 3314	Writing and Reading: Composing Processes	6
ENG 3315	Contemporary Critical Theory	
ENG 3317	Topics in Criticism	
ENG 3320	History of Criticism	
ENG 3321	Linguistics and Literature	
ENG 3322	Linguistics and Writing	
ENG 3324	Perspectives on American Literature	
ENG 3325	Topics in Early American Literature	
ENG 3326	Topics in 20th-Century American Literature	
ENG 3327	Major American Novelist	
ENG 3328	Major American Playwright	
ENG 3329	Major American Poet	
ENG 3330	American Drama	
ENG 3331	Topics in American Literature	
ENG 3347	Creative Writing Workshop	
ENG 3348	Materials and Methods for Technical Writing	
ENG 3349	Workshop in Writing for Publication	
ENG 3350	Creative Writing I (Prose)	
ENG 3351	Creative Writing II (Poetry)	
ENG 3352	Writing for the Professions	
ENG 3353	Topics in Writing	
ENG 3354	Technical Writing	

ENG 3355	Topics in Technical Writing	
ENG 3356	Technical Writing Theory and Practice	
ENG 3357	Computers and Writing	
ENG 3358	Topics in Non-Fiction Prose	
ENG 3359	Writing Workshop	
ENG 3360	Writing Workshop	
ENG 3361	Topics in Literary Study	
ENG 3365	Professional Presentations	
ENG 3366	Ethics of Technical and Professional Communication	
ENG 3367	Publications Management	
ENG 3368	Writing for the Computer Industry	
ENG 3369	Graphic Design for Technical Writers	
ENG 3370	Technical and Scientific Writing	
ENG 3371	PASCAL for Technical Writers	
ENG 3372	Graphic Design for Technical Writers II	
ENG 3380	Prose Writing I V	
ENG 3381	Prose Writing II V	
ENG 3382	Responding to Writing	
ENG 3383	The Composing Process	
ENG 3384	Rhetorical Theory	
ENG 3385	Writing About Literature & Other Disciplines	
ENG 3386	Research in Composition	
ENG 3392	Case Study Design V	2 QH
ENG 3391	Field Work V	3 QH
ENG 3389	Case Study Analysis V	1 QH
ENG 3400	Issues in English Grammar	
ENG 3401	Introduction to Semantics	
ENG 3402	History of the English Language	
ENG 3403	Topics in Linguistics	
ENG 3404	Introduction to Linguistics	
ENG 3406	Introduction to Syntax	
ENG 3416	20th-Century British Drama	
ENG 3419	Topics in Genre	
ENG 3548	Topics in Renaissance Literature	
ENG 3549	Topics in 17th-Century Literature	
ENG 3551	Chaucer	
ENG 3553	Medieval Literature	
ENG 3554	Topics in Medieval Literature	
ENG 3555	Renaissance Literature	
ENG 3558	Shakespeare's Tragedies	
ENG 3559	Shakespeare's Comedies	
ENG 3560	Topics in Shakespeare	
ENG 3561	17th-Century Literature	
ENG 3562	Milton	
ENG 3563	Restoration and Early 18th-Century Literature	
ENG 3564	Later 18th-Century Literature	
ENG 3565	Topics in 18th-Century Literature	
ENG 3566	18th-Century Novel	
ENG 3568	Romantic Poetry	
ENG 3569	Romantic Literature	
ENG 3570	Topics in Romanticism	
ENG 3571	Victorian Literature	
ENG 3572	Victorian Poetry	
ENG 3573	Victorian Novel	
ENG 3575	Topics in Victorian Literature	
ENG 3577	20th-Century British Poetry	
ENG 3580	20th-Century British Fiction	
ENG 3582	Topics in Irish Literature	

ENG 3583	Early American Literature
ENG 3585	Topics in 19th-Century American Literature
ENG 3586	19th-Century American Prose, 1820-1865
ENG 3587	19th-Century American Poetry
ENG 3589	19th-Century American Prose, 1865-1900
ENG 3591	Modern American Poetry
ENG 3592	Modern American Drama
ENG 3593	Individual Modern American Novelist
ENG 3594	Contemporary American Prose
ENG 3595	Individual Modern American Poet
ENG 3596	Individual American Writer
ENG 3597	Contemporary American Poetry
ENG 3598	Modern American Prose
ENG 3601	Thesis
ENG 3602	Independent Study
ENG 3603	Independent Study, CAGS
ENG 3604	Independent Project, Technical and Professional Writing
ENG 3605	Independent Study in Creative Writing
ENG 3606	Creative Writing Thesis
ENG 3610	Contemporary American Fiction
ENG 3612	Film Studies
ENG 3613	Topics in Film
ENG 3620	Rhetoric
ENG 3621	"C" Programming
ENG 3622	Topics in Drama
ENG 3623	Topics in Poetry
ENG 3624	Topics in Fiction
ENG 3625	Topics in Literary Relations
ENG 3626	Topics in Literature and Other Disciplines
ENG 3627	Topics in Comparative Literature
ENG 3628	Topics in 20th-Century British Literature
ENG 3798	Master's Continuation

History

The study of history encompasses the entire range of human experience at all times and in all places. At the graduate level at Northeastern University, students in history study methodology and historiography, pursue original research and writing in seminars, and specialize in periods, areas, public history, or other fields of particular interest to them.

Professors

Raymond H. Robinson, PhD, *Harvard University*,
Chairperson

Philip N. Backstrom, Jr., PhD, *Boston University*

Ballard C. Campbell, PhD, *University of Wisconsin*

William M. Fowler, PhD, *University of Notre Dame*

Harvey Green, PhD, *Rutgers University*

Donald M. Jacobs, PhD, *Boston University*

Patrick R. Manning, PhD, *University of Wisconsin*

John D. Post, PhD, *Boston University*

Associate Professors

Charmarie J. Blaisdell, PhD, *Tufts University*

Laura L. Frader, PhD, *University of Rochester*

Norbert L. Fullington, PhD, *Harvard University*

Christina Gilmartin, PhD, *University of Pennsylvania*

Clay McShane, PhD, *University of Wisconsin*

Assistant Professors

Ruth-Ann Harris, PhD, *Tufts University*

Gerald H. Herman, MA, *Northeastern University*

Lecturers

David C. Dearborn, *New England Historic*
Genealogical Society

Edward W. Hanson, *Massachusetts Historical Society*

Pauline Chase Harrell, *Boston Landmarks Commission*

Elliot W. Hoffman, *Quincy Historical Society*

Thomas W. Leavitt, *Museum of American Textile*
History

Joseph R. Orfant, *Massachusetts Historical Commission*

Sheldon M. Stern, *John F. Kennedy Library*

Albert H. Whitaker, Jr., *Massachusetts Archives*

Research

Faculty research interests cover a wide spectrum. Recently published books include *Parliament, the Press, and the Colonies; Representative Democracy: Public Policy and Midwestern Legislatures in the Late Nineteenth Century; Index to the American Slave; Jachts Tars and Commodores: A History of the American Navy, 1783-1815; Food Shortage, Climatic Variability, and Epidemic Disease in Preindustrial Europe; Francophone Sub-Saharan Africa, 1880-1985; and The Boston Economy During the Civil War*. Research projects under way include studies of women in the Reformation, agricultural labor and collective action in southern France, and the legacy of Islamic medicine. An analysis of "Missing Friends" advertisements in the *Boston Pilot* as a genealogical source and social history data of country origins of Irish immigrants and a project for public radio on the culture of the late nineteenth century are also in progress.

The Master's Degree

Admission

Procedures and requirements are discussed on page 1. Applicants for the fall quarter who submit their application and all supporting documents by March 15 will be notified on or about April 1. Students who are interested in financial assistance must file all material by March 15.

Programs

Two programs are available for candidates for the Master of Arts degree.

Option I

This program is designed for those who are interested in pursuing careers in research, writing, and teaching and requires forty-one quarter hours of academic work.

Students must take the following courses:

- HST 3241 Methodology
- HST 3242 European Historiography
- or
- HST 3243 American Historians

Two courses specifically labeled "seminar," except for students writing theses, who need take only one seminar.

Students must complete HST 3241 prior to enrolling in seminars, and grades of at least B must be obtained in the seminars.

In addition, students must complete at least one course in each of three areas: group 1, Europe; group 2, United States; and group 3, other areas. Group requirements are not satisfied by the historiography courses, HST 3242 and HST 3243.

With the prior approval of the faculty advisor, a maximum of three courses may be elected from either graduate courses in other departments or advanced undergraduate courses in history or related subjects. The undergraduate courses also require the approval of the Director of the Graduate School of Arts and Sciences.

A thesis is optional with the approval of the graduate committee. If approved, a thesis carries nine quarter hours of credit.

Option II

The second option, focusing on historical agencies and administration, is designed for those interested in careers outside the classroom. The subject matter of this option comprises the new and developing area of public, or applied, history. Many of the courses are taught by professionals in the Boston area.

The program requires forty-two quarter hours of academic work. The following are required:

- | | |
|--|--|
| HST 3241 | Methodology |
| HST 3242 | European Historiography |
| | or |
| HST 3243 | American Historians |
| INT 3540 | Computer Applications for Non-Profit Organizations |
| HST 3821 | Fieldwork in History I |
| HST 3822 | Fieldwork in History II |
| One course specifically labeled "seminar." | |

In addition, students must select four of the following:

- | | |
|----------|---|
| HST 3601 | Historical Administration |
| HST 3602 | Historical Societies and Archives |
| HST 3603 | Historical Exhibits and Museums |
| HST 3605 | Historical Editing |
| HST 3610 | Industrial Archeology |
| HST 3611 | Historic Preservation |
| HST 3620 | Oral History |
| HST 3621 | Genealogical Research: Methods and Uses |
| HST 3622 | Local History Methodology |
| HST 3625 | Media and History |

The remaining three courses are taken from the list of graduate courses in history.

With the prior approval of the faculty advisor, a maximum of three courses may be elected from either graduate courses in other departments or advanced undergraduate courses in history or related subjects. The undergraduate courses also require the approval of the Director of the Graduate School of Arts and Sciences.

A brochure describing this second option in further detail is available by request from the Department of History.

Comprehensive Examination

All degree candidates must pass a written comprehensive examination or satisfy an optional requirement specified by the department.

Language Requirement

Degree candidates must demonstrate proficiency in a foreign language approved by the department or, as an alternative option, proficiency in either computer programming or advanced statistics.

Financial Aid

Each year a limited number of stipended graduate assistantships are awarded on a competitive basis to both entering and continuing students. In addition, several Northeastern University Tuition Assistantships are available. Please see page 170 for further details.

Course Listings

The following is a listing of all departmental course offerings. Please refer to the *Graduate Schools Course Descriptions* for course descriptions and relevant prerequisites.

Course No.	Course Name	Credits
HST 3241	Methodology	3
HST 3242	European Historiography	3
HST 3243	American Historians	3
HST 3301	Ancient Greece	3
HST 3302	Ancient Rome	3
HST 3306	The Renaissance	3
HST 3307	The Reformation	3
HST 3315	Diplomatic History of Europe 1815-1914	3
HST 3318	Imperialism	3
HST 3320	20th Century Europe	3
HST 3322	Socialism and Revolution	3
HST 3331	Britain 1815-1914	3
HST 3332	Britain Since 1914	3

HST 3339	Modernization of Ireland	3 QH
HST 3345	Hitler's Germany	3 QH
HST 3370	Family History	3 QH
HST 3380	Seminar in the Renaissance	4 QH
HST 3381	Seminar in the Reformation	4 QH
HST 3382	Seminar in European Intellectual History	4 QH
HST 3383	Seminar in 19th Century Europe	4 QH
HST 3384	Seminar in 20th Century Europe	4 QH
HST 3385	Seminar in European Social History	4 QH
HST 3386	Seminar in Imperialism	4 QH
HST 3387	Seminar in 19th Century Britain	4 QH
HST 3388	Seminar in 20th Century Britain	4 QH
HST 3389	Seminar in Modern France	4 QH
HST 3397	Seminar in Comparative Labor History	4 QH
HST 3399	Seminar in Approaches to Women's History	4 QH
HST 3404	Colonial America: The 17th Century	3 QH
HST 3405	Colonial America: The 18th Century	3 QH
HST 3407	The American Revolution	3 QH
HST 3408	American Constitutionalism, 1781-1801	3 QH
HST 3410	Topics in American Reform	3 QH
HST 3413	Topics in the Civil War and Reconstruction	3 QH
HST 3421	Political Change in 20th Century America	3 QH
HST 3423	The Age of Roosevelt	3 QH
HST 3434	American Social History 1900-1950	3 QH
HST 3440	African-American History I	3 QH
HST 3441	African-American History II	3 QH
HST 3442	New Perspectives on American Slavery	3 QH
HST 3450	Boston As a City	3 QH
HST 3480	Seminar in American History	4 QH
HST 3481	Seminar in Colonial and Revolutionary America	4 QH
HST 3482	Seminar in American Governmental History	4 QH
HST 3483	Seminar in American Urban History	4 QH
HST 3484	Seminar in American Maritime History	4 QH
HST 3485	Seminar in African-American History	4 QH
HST 3486	Seminar in Recent American History	4 QH
HST 3501	History of Exploration	3 QH
HST 3503	Approaches to World History	3 QH
HST 3505	Canada and the United States	3 QH
HST 3508	Modern Africa	3 QH
HST 3509	Pan-Africanism	3 QH
HST 3510	History of the Islamic Peoples	3 QH
HST 3512	Modern Middle East	3 QH
HST 3523	Modern Japan	3 QH
HST 3529	Communism in China	3 QH
HST 3531	Population in History	3 QH
HST 3540	Economic History of the Modern Western World	3 QH
HST 3601	Historical Administration	3 QH
HST 3602	Historical Societies and Archives	3 QH
HST 3603	Historical Exhibits and Museums	3 QH
HST 3605	Historical Editing	3 QH
HST 3610	Industrial Archeology	3 QH
HST 3611	Historic Preservation	3 QH
HST 3620	Oral History	3 QH
HST 3621	Genealogical Research: Methods and Uses	3 QH
HST 3622	Local History Methodology	3 QH
HST 3625	Media and History	3 QH

HST 3805	Assigned Reading	1 C
HST 3806	Assigned Reading	2 C
HST 3807	Assigned Reading	3 C
HST 3811	Thesis	9 C
HST 3812	Thesis	3 C
HST 3813	Thesis	3 C
HST 3821	Fieldwork in History I	4 C
HST 3822	Fieldwork in History II	4 C

Journalism

Professors

LaRue W. Gilleland, MAJ, *University of Missouri,*
Director

Visiting Professor

Nicholas Daniloff, MA, *Oxford University*

Associate Professors

William Kirtz, MS, *Columbia University*

Patricia Kelly, PhD, *Brown University*

Assistant Professors

Marjorie Brooks, MSJ, *Northwestern University*

Charles Fountain, MSJ, *Columbia University*

Nancy Gallinger, MA, *Northeastern University*

Roy Harris, MA, *University of Oklahoma*

James Ross, MA, *American University*

William E. Smith, JD, *Wayne State University,*
Graduate Coordinator

Admission

In addition to the general regulations listed earlier in the graduate catalog, an applicant must display a genuine interest in print or broadcast journalism. No prior course work in journalism is required, but a student should have earned a B average in undergraduate work. Exceptions may be made for students displaying unusual talent in the areas of writing and reporting. In addition, applicants must take the Graduate Record Examination.

Cooperative Education

The School of Journalism offers a unique dimension to the traditional master's degree program. This approach is a balance of academic study at the University and practical on-the-job assignments in the various media and related agencies. Graduate students in all degree tracks may elect to alternate classroom study with three or six months of paid media work.

Program Planning

Prospective students and current students should discuss their programs with the graduate coordinator, who may be reached by calling 437-3236.

Transfer of Credits A student may transfer up to two graduate courses (and no more than twelve quarter hours) from other accredited universities, with the approval of the graduate coordinator. (See page 30 for the Graduate School policy on transfer credit.)

Degree Requirements

Master of Arts Degree in Journalism

The Master of Arts degree offers a professional and a research track. Each requires successful completion of 12 courses and a comprehensive examination. A core curriculum of four courses is required in both tracks. The core includes:

JRN 3679	Research Methods in Journalism
JRN 3682	Mass Communication Theories
JRN 3684	Literature of Journalism
JRN 3870	Graduate Seminar

From this point, the course requirements for professional and research track differ as follows:

A. Professional track. This track is for the student who has earned a bachelor's degree in a non-journalistic field and who has little or no news media experience. This track includes intensive work to develop competency in reporting, writing, editing, and associated skills.

Required undergraduate journalism courses (which carry no graduate credit) for the professional track are

JRN 1104	Newswriting II
JRN 1206	Editing

Required graduate courses (in addition to the core) are

JRN 3501	History of Journalism
JRN 3512	Journalism Ethics and Issues
JRN 3508	Law of the Press
JRN 3898	Specialized Reporting Practicum (8 credits)

In addition, each student must take three graduate journalism electives.

B. Research track. This track, which requires a thesis, is for the student with a bachelor's degree in journalism or extensive news media experience who plans a career in research or specialized writing.

With approval of a graduate advisor, the student selects an area of interest (possibilities among others include libel law, journalism ethics, broadcast regulation, local government reporting, or covering the criminal justice system) which will become the focus of the thesis and selection of courses, both journalism and non-journalism. At least one member of the student's thesis committee will represent a department outside of journalism most closely associated with the student's research.

Required graduate courses, in addition to the core, fall into three categories:

- I. JRN 3897 Thesis (8 credits)
- II. Graduate Journalism electives. A maximum of three may be taken from this list:

JRN 3432	Local Government Reporting
JRN 3617	The Constitution and Mass Communication
JRN 3575	News Media Management
JRN 3870	Graduate Seminar (may be repeated here when topic changes)
JRN 3890	Directed Study

- III. Graduate courses outside of journalism which relate to the student's research. Up to four such courses may be taken.

The total number of courses required in the research track is 12.

Master of Journalism Degree in News Media Management

This degree is for the student with a bachelor's degree in journalism and/or experience as a reporter or editor or advertising representative, who wants to prepare for an eventual position such as publisher, managing editor, or advertising director. The Master of Journalism in News Media Management benefits from participation by the Graduate School of Business Administration from which three of the courses in this 12-course degree program are taken.

To obtain this degree, the student must complete six journalism courses, a concentration of three business

courses, and three electives from such fields as economics, sociology or psychology. Three business concentrations are available, and the student will select one depending on his/her career objective. They are (1) General Business, for the student interested in publishing or broadcast news media management, (2) Marketing and Sales, for the student interested in advertising research or circulation management, and (3) Organizational Behavior, for the student interested in news department management.

The student must also pass a comprehensive examination.

All students in the Master of Journalism program should have taken an undergraduate accounting principles course before beginning work on any graduate business courses. An undergraduate accounting course does not carry graduate credit.

Course Listings

The following is a listing of all departmental course offerings. Please refer to the *Graduate Schools Course Descriptions* for course descriptions and relevant prerequisites.

(All courses carry four hours credit unless otherwise specified)

JRN 3201	Reporting
JRN 3422	Design and Graphics
JRN 3432	Local Government Reporting
JRN 3501	History of Journalism
JRN 3508	Law of the Press
JRN 3512	Journalism Ethics and Issues
JRN 3575	News Media Management
JRN 3617	The Constitution and Mass Communications
JRN 3622	Magazine Writing
JRN 3678	Applied Leadership Techniques
JRN 3679	Research Methods in Journalism
JRN 3682	Mass Communication Theories
JRN 3684	Literature of Journalism
JRN 3691	Professional Paper
JRN 3870	Graduate Seminar
JRN 3880	Graduate Seminar
JRN 3890	Directed Study
JRN 3892	Topics
JRN 3897	Thesis (8 credits)
JRN 3898	Specialized Reporting Practicum (8 credits)

Law, Policy, and Society

The Law, Policy and Society Program is an interdisciplinary doctoral program that combines the study of the social sciences and the law. It offers students the opportunity of studying societal issues from the related perspectives of social science research, policy analysis and the law. Since the program first admitted students in the fall of 1982, it has become clear that it meets a need felt by people in a number of different disciplines; our students include lawyers, college teachers, policy makers, researchers and administrators from government, education and business.

The program is administered in the Graduate School of Arts and Sciences and has affiliations with faculty members and schools throughout the University. The affiliated faculty teach in the program, take part in joint courses, advise students on their course of study and their dissertation, and share in the academic planning of the program. Students also enroll in courses given by faculty members not affiliated with the program.

Students who enter the doctoral program already have a master's degree in social science or a related applied field, or have a law degree. The program offers a master's degree for those who have earned a law degree or who are studying for a law degree in the School of Law at Northeastern University.

Affiliated Faculty

African-American Studies

Holly Carter, PhD, *Massachusetts Institute of Technology*

Business Administration

Brendan Bannister, DBA, *Pennsylvania State University*

Angelo J. Fiumara, JD, *Boston College*

Christine Hobart, DBA, *Harvard University*

Alan Lee, PhD, *Massachusetts Institute of Technology*

Daniel McCarthy, MBA, *Dartmouth College*, DBA,
Harvard University

Carl W. Nelson, PhD, *University of Manchester, England*

Criminal Justice

Edith Flynn, PhD, *University of Illinois*

James Fox, PhD, *University of Pennsylvania*

George Kelling, PhD, *University of Wisconsin*

John Laub, PhD, *State University of New York, Albany*

Nicole Hahn Rafter, PhD, *State University of New York
Albany*

Paul Tracy, PhD, *University of Pennsylvania*

Economics

Neil Alper, PhD, *University of Pittsburgh*

Kamran Dadkhah, PhD, *Indiana University*

Alan Dyer, PhD, *University of Maryland*

Barbara Fraumeni, PhD, *Boston College*

Harold M. Goldstein, PhD, *Clark University*

Daryl A. Hellman, PhD, *Rutgers University*

Morris A. Horowitz, PhD, *Harvard University*

Gregory Wassall, PhD, *Rutgers University*

History

Ballard Campbell, PhD, *University of Wisconsin*

Ruth-Ann Harris, PhD, *Tufts University*

Donald M. Jacobs, PhD, *Boston University*

Clay McShane, PhD, *University of Wisconsin*

Human Development Professions

Irene Nichols, EdD, *Harvard University*

Law, Policy and Society

Leonard Buckle, PhD, *Massachusetts Institute of
Technology*

Suzann Thomas-Buckle, PhD, *Massachusetts Institute
Technology*

Law School

Denise Carty-Bennia, JD, *Columbia University*

Richard Daynard, LLB, *Harvard University*, PhD,
Massachusetts Institute of Technology

Daniel Givelber, LLB, *Harvard University*

Michael Melstner, LLB, *Yale Law School*

Manuel Rodriguez-Orellana, JD, *Boston College Law
School*, LLM, *Harvard University*

Stephen Subrin, LLB, *Harvard University*

Nursing

Lee Ann Hoff, MS, *London School of Economics*, PhD,
Boston University

Pharmacy and Allied Health Professions

Judith Barr, ScD, *Harvard University*

Philosophy

Bart Gruzalski, PhD, *University of Maryland*

Stephen Nathanson, PhD, *John Hopkins University*

Political Science

Robert L. Cord, PhD, *Syracuse University*

Robert E. Gilbert, PhD, *University of Massachusetts*

William Kay, PhD, *Indiana University*

Eileen M. McDonagh, PhD, *Harvard University*

Psychology

Harry Mackay, PhD, *Queen's University*

Harold S. Zamansky, PhD, *Harvard University*

Sociology and Anthropology

Richard Bourne, PhD, *Harvard University*, JD, *Boston University*

Christine Gailey, PhD, *New School for Social Research*

M. Patricia Golden, PhD, *Cornell University*

Debra R. Kaufman, PhD, *Cornell University*

Maureen Kelleher, PhD, *University of Missouri, Columbia*

Thomas H. Koenig, PhD, *University of California, Santa Barbara*

Elliot A. Krause, PhD, *Boston University*

Carol Owen, PhD, *Cornell University*

Judith Perrolle, PhD, *Brown University*

Earl Rubington, PhD, *Yale University*

Michael Rustad, PhD, *Boston College*

Research

The research centers affiliated with the program are resources for students and affiliated faculty. Students are encouraged to discuss research projects and current issues in research with members of the centers.

The Center for Applied Social Research

Established in 1979, the center conducts interdisciplinary research in the social sciences on issues in criminal justice, public safety, mental health, social welfare, and education. Much of this work studies the relationship between the law and its impact on society and social behavior. Glenn Pierce, PhD, is the director of the center.

The Center for Urban and Regional Economic Studies
This center recently has conducted research on the economic impact of a military installation on the neighboring region, has evaluated property tax relief in Connecticut, has examined the interrelationship between urban property values and urban crime control, and has investigated the nature and extent of violence in the Boston public schools. Daryl Hellman, PhD, is the director of the center.

The Center for Medical Manpower Studies
Since 1967, the center has conducted research on a wide variety of medical issues, including the costs of medical care, analysis of healthcare plans, employment in the medical profession from nurses' aides to physicians, and the licensing and legal status of healthcare professionals. Harold Goldstein, PhD, is the director of the center.

The Center for Labor Market Studies
The center conducts research and advises government agencies and nonprofit organizations on employment, training, and welfare. The staff has also provided technical assistance and training for government agencies and for employment and labor market programs. Andrew Sum is the director of the center.

Program Administration

The co-directors of the program are appointed by the dean of the Graduate School of Arts and Sciences; they administer the program and chair the coordinating committee, which sets policy for the program. The members of the committee are elected by the College of Criminal Justice, the School of Law, the College of Business Administration, the College of Pharmacy and Allied Health Professions, Boston-Bouvé College of Human Development Professions, and social science and humanities departments in the College of Arts and Sciences.

Admission

Applicants to the Law, Policy and Society Program must have a graduate degree; those applying to the PhD program must have a master's degree in a social science or a related discipline, such as philosophy, education or business administration, or have a law degree. Applicants to the MS program must have a law degree or be applying to the joint JD/MS program given by the program and the School of Law at Northeastern. Students who are admitted to the program each spring begin

coursework in the fall quarter only; there is no admission to the program later in the year.

Application materials are available from the office of the program. Applicants should send the co-directors of the program official copies of their undergraduate and graduate transcripts, three letters of recommendation, the application form, a statement explaining the applicant's interest in an interdisciplinary program and a proposed field of study, and official scores from the Graduate Record Examination (the General Test only) or the Law School Admission Test. International students seeking admission to these programs should consult earlier sections of this catalog for information about additional requirements applying to them.

All application materials must be received no later than March 1 of the spring preceding the fall quarter for which admission is requested. Materials should be mailed to:

Law, Policy, and Society Graduate Directors
Cushing Hall
Northeastern University
360 Huntington Avenue
Boston, Massachusetts 02115

Official scores from the Graduate Record Examination (General Test) should be sent to the office of the Graduate School of Arts and Sciences; the scores from the Law School Admission Test should be sent to the School of Law at Northeastern University.

PhD Program in Law, Policy, and Society

rogram

Students may study either part-time or full-time; however, all students are required to complete the coursework in three academic years. Students enroll in at least 33 quarter hours of coursework: 16 quarter hours of core requirements and 17 quarter hours of concentration courses.

Core Course Requirements

The following courses constitute the core requirement:

Course No.	Course Name	Credit
INT 3249	Law, Policy and Society Survey	2 Q
INT 3250	Continuation of INT 3249	2 Q
INT -----	Policy Analysis	3 Q
INT 3330	Theoretical Traditions in Law, Policy and Society	2 Q
ECN 3315	Economics of Law and Public Policy	3 Q
LAW 2364	Legal Research and Bibliography	1 Q
LAW -----	Law School Elective	2 Q
INT 3650	Seminar in Law, Policy and Society	1 Q

Students who have completed courses substantially the same as the core courses may petition for a waiver from the curriculum committee of the program; waiver do not reduce the number of quarter hours required but allow students to take more advanced courses in their concentrations (see below).

Two core courses have prerequisites for enrollment:

1. Theoretical Traditions in Law, Policy and Society presumes a knowledge of introductory statistics, which may be demonstrated by passing a proficiency examination given each fall by the program or by successfully completing a course in statistics such as ECN 3240, SOC 3115 or ED 3341.
2. Economics of Law and Public Policy has as a prerequisite ECN 3512, Introduction to Microeconomics, or the permission of the instructor. Credit for either prerequisite course may not be counted toward the quarter hours required by the program.

Concentration Requirements

The remainder of the coursework in the doctoral program, a minimum of seventeen quarter hours, is devoted to the student's concentration area. The concentration area is an interdisciplinary field of study in a policy area selected by the student and developed by the student with her or his advisor.

The courses in the concentration area may be drawn from virtually any area of the university offering graduate courses; and to assure that the study is interdisciplinary, the courses have to be chosen from at least three different departments or schools. They must all

include the methodological courses needed to prepare the student for conducting research for a dissertation. Students' choice of courses should reflect their earlier academic and work experience, and their purpose in seeking an LPS doctoral degree. During the first year, all students prepare program statements that explain their interests and how they relate to law, policy and society, describe their concentration area, and list the courses they will take. Each student's program statement is prepared with the advice and assistance of an advisory committee that includes the student's academic advisor and two other affiliated faculty members, one of whom is also on the program's coordinating committee. Once approved by this advisory committee, the program statement serves as the plan of study while the student is completing coursework.

Comprehensive Qualifying Examinations

After completing the course requirements, each student must pass two parts of the comprehensive qualifying examination: (1) a written examination in the broad area of law, policy, and society, including relevant theoretical and methodological issues; and (2) an individual written examination or state-of-the-art paper in the student's selected concentration area.

Degree Candidacy

Degree candidacy is established when the student has completed the minimum number of quarter hours required for the degree and has passed the comprehensive qualifying examinations.

Language Requirement

Students are expected to demonstrate competence in one language, other than English, that is relevant to the study of law, policy, and society. Students must submit their choice of language to the program curriculum committee for approval. A demonstration of computer literacy may be substituted to fulfill this requirement.

Dissertation

An original doctoral dissertation is required of all doctoral students, in accordance with the general regulations of the Graduate School of Arts and Sciences. The student's thesis advisor and at least one other member of the thesis committee must have affiliate status in the Law, Policy, and Society Program.

Final Oral Examination

In keeping with the academic requirements of the Graduate School of Arts and Sciences, doctoral candidates must also pass a final oral examination on the

subject explored in their doctoral dissertation, including important developments in the field covered in the dissertation.

This examination is taken after the student has completed all other degree requirements and must be held at least two weeks before the commencement at which the degree is to be awarded.

MS Program in Law, Policy, and Society

Students accepted into the MS program or the combined MS/JD program complete a minimum of forty quarter hours of graduate work, including the sixteen quarter hours of core courses and seventeen quarter hours of concentration for the doctoral program. Students in the combined MS/JD program may transfer seven quarter hours of law school coursework for credit toward the degree.

Students must pass a comprehensive qualifying examination to fulfill the requirements for the master of science degree in law, policy, and society.

Students

The students in the Law, Policy and Society program have diverse backgrounds and interests. In addition to those holding JD or LLM degrees in law or masters degrees in anthropology, economics, history, sociology or other social science, the program includes students with masters degrees in such fields as computer science, pharmacy, business administration, social work and public administration. Their professional backgrounds also range widely; some entered the program directly from their masters programs, while others have worked extensively in private enterprise, public agencies, colleges and universities, or private practice as lawyers, consultants, or other professionals.

The fields of concentration the students have selected for their studies in law, policy and society reflect this diversity and the wide range of interests that brought them to the program. While these fields of concentration reflect the particular strengths of Northeastern University's graduate programs, such as economic regulation and development, environmental protection and urban development, health-care delivery, computer science, criminal justice and business administration, they also reflect the individual



perspectives and interests of each student, as the following sample of program concentrations illustrates:

- Policy and regulation in water quality management
- Ethical and legal constraints on public intervention in labor markets
- Comparative judicial review practices and women's rights
- Collective bargaining in the public sector
- Legal and policy dilemmas in deterrence of crime
- International law, national policies, and the development of coastal economic zones
- Comparative constitutional practices
- Official labeling and professional practice in the creation of deviants
- Public responses to medical mistakes and impaired health professionals
- Alternative dispute resolution in State trial courts

The diversity of student interests shown in these concentration areas is held in balance by a common concern for the application of social science and legal scholarship to the interaction of laws and policies with social life.

Mathematics

The graduate program in mathematics is structured to provide the opportunity for students to gain a strong general foundation and proficiency in a particular area of specialization. Those who are admitted to the doctoral program find a versatile and active research faculty able to direct them in a variety of original research topics. The mathematical life at Northeastern University is often enlightened by the visits of eminent mathematicians to the University or to the Greater Boston area. Numerous departmental and regional seminars also give the student an opportunity to learn of the most recent and important advances in modern mathematics.

Professors

Margaret Cozzens, PhD, *Rutgers University,*
Chairperson

Samuel J. Blank, PhD, *Brandeis University*

Gail A. Carpenter, PhD, *University of Wisconsin*

Bohumil Cenk, DSc, *Charles University, Prague,*
Czechoslovakia

David I. Epstein, PhD, *New York University*

Holland C. Filgo, Jr., PhD, *Rice University*

Terence Gaffney, PhD, *Brandeis University*

Alberto R. Galmarino, PhD, *Massachusetts Institute*
of Technology

Maurice E. Gilmore, PhD, *University of California,*
Berkeley

Mark Goresky, PhD, *Brown University*

Arshag Hajian, PhD, *Yale University*

Anthony Iarrobino, PhD, *Massachusetts Institute of*
Technology

Marc N. Levine, PhD, *Brandeis University*

Richard D. Porter, PhD, *Yale University*

Jayant M. Shah, PhD, *Massachusetts Institute of*
Technology

Gabriel Stolzenberg, PhD, *Massachusetts Institute of*
Technology

Chuu-Lian Terng, PhD, *Brandeis University*

Jack Warga, PhD, *New York University*

Associate Professors

Shirley A. Blackett, MEd, *Pennsylvania State University*

Mark Bridger, PhD, *Brandeis University*

Robert W. Case, PhD, *Yeshiva University*

Bruce Claflin, MS, *Northeastern University*

Stanley J. Eigen, PhD, *McGill University, Montreal, Canada*

John N. Frampton, PhD, *Yale University*

Eugene H. Gover, PhD, *Brandeis University*

Samuel Gutmann, PhD, *Massachusetts Institute of Technology*

Solomon M. Jekel, PhD, *Dartmouth College*

Nishan Krikorian, PhD, *Cornell University*

Robert C. McOwen, PhD, *University of California, Berkeley*

Mark B. Ramras, PhD, *Brandeis University*

Martin Schwartz, Jr., PhD, *New York University, Courant*

Thomas O. Sherman, PhD, *Massachusetts Institute of Technology*

Gordana G. Todorov, PhD, *Brandeis University*

Assistant Professors

David Bernstein, PhD, *University of Maryland*

Mo-Suk Chow, PhD, *Cornell University*

Donald R. King, PhD, *Massachusetts Institute of Technology*

Nadimpalli Mahadev, PhD, *University of Waterloo*

Alex Martsinkovsky, PhD, *Brandeis University*

Zakhar G. Maymin, PhD, *Massachusetts Institute of Technology*

Maria I. Platzeck, PhD, *Brandeis University*

A. Prabhaker Rao, PhD, *University of California, Berkeley*

Nevin Scrimshaw, PhD, *Massachusetts Institute of Technology*

Alexandru Suci, PhD, *Columbia University*

Barbara Tabak, PhD, *University of California, Berkeley*

Research

For the last several years, the Mathematics Department has established as priorities for the hiring of new research faculty the areas of statistics and applied algebra and analysis. Besides the important research studies being conducted in those fields, the department has strong and active research mathematicians in a variety of other areas. Below is a partial list of current research areas and some of the studies being under-

taken. The order roughly follows that adopted by the *Mathematical Reviews*. The list constitutes a rich cross section of the whole mathematics.

- Foundations: Study of constructive mathematics.
- Combinatorics: Studies in applications of graph theory techniques to problems in such diverse areas as computer science, biology, psychology, and management science. Study of computer implementation of algorithms arising in algebra and topology.
- Commutative algebra: Study of Artin algebras.
- Algebraic geometry: Singularities, study of Hodge theory and moduli problems. Study of moduli of stable rank-two bundles on P^3 .
- Lie theory: Structure and representation of Weyl groups. Noncommutative harmonic analysis on symmetrical spaces.
- Measure theory: Studies of ergodic theory.
- Optimal control theory: Studies of optimization and non-smooth analysis. (A faculty member is a member of the board of the *SIAM Journal on Control and Optimization*.)
- Partial differential equations: Study of elliptical partial differential equations on noncompact domains and manifolds.
- Differential geometry: Variational problems, geometry of submanifolds. Study of differential forms with applications to group lie algebras and their cohomologies. Study of Bäcklund transformations of chiral fields on Grassman and Stiefel manifolds.
- Algebraic topology: Tame homotopy theory.
- Statistics: Studies of statistical decision theory, pattern recognition, and industrial applications of statistics.
- Applied analysis: Studies of reaction diffusion equations, spontaneous pattern formation in physics and chemistry, forced and complex oscillators, and theoretical neurobiology.

Applicants for admission must satisfy the admissions requirements listed on page 23. In addition, they should have a background that includes courses in linear and modern algebra, mathematical analysis, and computer programming. Students who have deficiencies in these areas may be accepted if their overall college work is judged satisfactory. However, they will be expected to

learn the material during the first two quarters. Some of the courses may be taken at Northeastern University during the summer preceding enrollment. Students may also choose to enroll in the introductory courses and make individual arrangements with their advisors.

The Master of Science Degree

The Mathematics Department offers a program of study leading to the MS degree in mathematics. The program allows students the opportunity to pursue the option of an internship in one of the many high-technology industries and research laboratories located in the Boston area.

Areas of specialization are:

Combinatorics
Computer Science
Differential Equations
Probability and Statistics
Pure Mathematics

Course Requirements

Twelve 4 quarter hour graduate courses (for a total 48 QH) are required for the degree.

Concentration in Combinatorics

- (i) Required courses: Algebra I, Analysis I, Data Structures, Combinatorics I, Algorithms and Complexity.
- (ii) 3 electives from: Combinatorics II (Coding Theory, Graph Theory, Optimization, Discrete Mathematical Models, Selected Topics in Combinatorics).
- (iii) 1 of the following: Algebra II, Analysis II, Computer Organization and Assembly Language.
- (iv) 2 of the following: Numerical Analysis, Statistical Probability, Applied Math I, Geometry I, PDE I.
- (v) 1 free choice elective.

Concentration in Computing

- (i) Required Courses: Algebra I, Analysis I, Data Structures, Computer Organization and Assembly Language, Compilers I, Algorithms and Complexity.

- (ii) 3 of the following: Numerical Analysis, Statistics I, Probability, Applied Math I, Algebra II, Analysis II, Geometry I, PDE I, Combinatorics I, II, Graph Theory.
- (iii) 3 computer science graduate courses.

Concentration in Differential Equations

- (i) Required courses: Algebra I, Analysis I, II, Topology I, Data Structures.
- (ii) 7 electives depending on the specialized field. Major in PDE should include Analysis III, Geometry I, PDE I, II. Major in ODE should include Analysis III, ODE I, II, III. Major in other Differential equation type Applied Math: consult with advisor.

Concentration in Probability and Statistics

- (i) Required Courses: Analysis I, Algebra I, Data Structures, Probability I, Statistics I.
- (ii) 3 advanced courses in the specialty area.
- (iii) 4 free choice elective courses in consultation with advisor.

Concentration in Pure Math

- (i) Required Courses: Algebra I, II, Topology I, II, Analysis I, II, Geometry I, Data Structures.
- (ii) 4 electives: 2 (above the level of courses in (i)) should be in one specialized field.

Nearly all graduate courses in the Mathematics Department meet after 5 p.m., Monday to Thursday, so that students who work during the day may take one or two courses each quarter at night. After completing the MS degree, a student with an excellent academic record may apply for admission to Northeastern's PhD program in mathematics.

Students in this program may progress according to their abilities and available time, subject, of course, to the time limitation established by the Graduate School of Arts and Sciences. Students who are deficient in any of the mathematics courses required for admission to the degree program are required to satisfy their deficiencies by taking courses given for this purpose. Such courses carry graduate credit, but that credit is regarded as additional to regular degree requirements.

Other Requirements

There are no comprehensive examinations and no language requirements for the MS degree.

The Doctor of Philosophy Degree

Admission

Students who have completed the full-time master's degree program or who have obtained a master's degree at another institution are eligible for admission to the doctoral program. Students who wish to earn the doctoral degree should inform the chairperson of the graduate committee of their desire to be doctoral candidates. Those who have been accepted as doctoral candidates will remain in that category as long as their progress is deemed satisfactory.

Areas of specialization are:

Combinatorics
Differential Equations
Probability and Statistics
Pure Mathematics

Residence Requirement

The residence requirement is satisfied by one year of full-time graduate work.

Degree Candidacy

Degree candidacy is established in accordance with general Graduate School regulations.

Course Requirements

Concentration in Combinatorics

A total of 8 courses beyond the Master's degree, plus PhD dissertation courses leading to a thesis topic.

- (a) The courses listed in (i) and (ii) above if not previously taken.
- (b) 3 courses in minor specialty not including any courses listed in (i).
- (c) PhD Continuation until thesis is done.

Concentration in Differential Equations

A total of 8 courses beyond the Master's degree, plus 3 PhD dissertation courses leading to a thesis topic.

- (a) The courses listed in (i) above if not previously taken.
- (b) Required courses: Algebra II, Analysis III, Geometry I, II, Topology II.
- (c) 3 courses in minor specialty not including any courses listed in (i).
- (d) PhD Continuation until thesis is done.

Concentration in Probability and Statistics

PhD candidates must fulfill their additional 8 course requirement according to specific guidelines established by their advisor in each particular case. Proficiency in measure theory must be ensured by those guidelines.

Concentration in Pure Mathematics

A total of 8 courses beyond the Master's degree, plus 3 PhD dissertation courses leading to a thesis topic.

- (a) The courses listed in (i) above if not previously taken.
- (b) Required courses: Algebra III, Analysis III, Geometry II.
- (c) 3 courses in minor specialty not including any courses listed in (i).
- (d) PhD Continuation until thesis is done.

Minor Specialty

Each doctoral candidate selects some specific mathematical subject of an advanced nature, which must be reasonably unrelated to the topic of the student's dissertation. By means of reading, lecture courses, and/or seminars, the student should render work in this area equivalent to a good part of one full year's coursework (twelve quarter hours). Approval of the area and the plan of work should be obtained in advance from the departmental graduate committee.

Foreign Language Requirements

Ability to read and translate mathematical texts and journals in one foreign language must be established by the candidate. The language may be chosen from

French, German, and Russian; any other choice requires special approval. Students should notify the chairperson of the departmental graduate committee when they are prepared to be examined on a language. The examination is conducted by a member of the faculty of the Mathematics Department.

Teaching Requirement

Some teaching experience is required. This requirement may be satisfied by at least one year of service as a teaching assistant or by suitable teaching duties.

Dissertation

After the successful completion of the above requirements, students select a dissertation advisor, under whose guidance they write their doctoral dissertations. They may be assisted by the departmental graduate committee in that selection if they wish. The dissertation itself must represent an original solution of a problem in the chosen area of mathematics that makes some contribution to mathematical knowledge.

Final Oral Examination

The final oral examination on the dissertation is held in accordance with the Graduate School regulations.

Course Listings

The following is a listing of all departmental course offerings. Please refer to the *Graduate Schools Course Descriptions* for course descriptions and relevant prerequisites. The following course is offered for those who wish to enter the master's degree program in mathematics but who fail to satisfy the admission requirements. This course is taken in addition to the required coursework in mathematics.

MTH3020	Basics of Analysis	4
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The following courses may be used toward the degree requirements in mathematics:

MTH3101	Analysis I	4
MTH3102	Algebra I	4
MTH3103	Analysis II	4
MTH3104	Algebra II	4
MTH3105	Topology I	4
MTH3106	Analysis III	4
MTH3107	Topology II	4

MTH3222	Applied Statistics	4 QH
MTH3224	Biostatistics	3 QH
MTH3230	Introduction to Computer Programming and Applications	2 QH
MTH3231	Introduction to Computer Programming and Applications	4 QH
MTH3302	Constructive Algebra	4 QH
MTH3303	Set Theory	4 QH
MTH3307	Constructive Mathematics I	4 QH
MTH3308	Constructive Mathematics II	4 QH
MTH3309	Constructive Mathematics III	4 QH
MTH3311	Mathematical Logic	4 QH
MTH3321	Algebra III	4 QH
MTH3332	Commutative Algebra	4 QH
MTH3341	Ordinary Differential Eqs. I (Perturbation)	4 QH
MTH3342	Ordinary Differential Eqs. II (Dynamical Systems)	4 QH
MTH3343	Ordinary Differential Eqs. III (Topics)	4 QH
MTH3353	Partial Differential Equations I	4 QH
MTH3355	Partial Differential Equations II	4 QH
MTH3361	Numerical Analysis I	4 QH
MTH3362	Numerical Analysis II	4 QH
MTH3371	Optimal Control Theory	4 QH
MTH3373	Optimization	4 QH
MTH3386	Lie Theory	4 QH
MTH3400	Geometry I	4 QH
MTH3402	Algebraic Geometry I	4 QH
MTH3407	Geometry II	4 QH
MTH3411	Differential Geometry I	4 QH
MTH3412	Differential Geometry II	4 QH
MTH3431	Probability I	4 QH
MTH3432	Probability II	4 QH
MTH3441	Statistics I	4 QH
MTH3443	Statistical Decision Theory	4 QH
MTH3444	Analysis of Variance	4 QH
MTH3445	Topics in Statistics	4 QH
MTH3448	Nonparametric Methods in Statistics	4 QH
MTH3450	Categorical Data Analysis	4 QH
MTH3452	Time Series	4 QH
MTH3460	Pattern Recognition	4 QH
MTH3481	Topology III	4 QH
MTH3501	Data Structures	4 QH
MTH3502	Computer Organization and Assembly Programming	4 QH
MTH3503	Compilers	4 QH
MTH3514	Algebraic Algorithms	4 QH
MTH3515	Parallel Computation	4 QH
MTH3521	Automata and Formal Languages	4 QH
MTH3522	Foundations of Artificial Intelligence	4 QH
MTH3524	Discrete Mathematical Models	4 QH
MTH3527	Combinatorics I (Enumeration)	4 QH
MTH3528	Combinatorics II (Coding Theory & Block Designs)	4 QH
MTH3529	Graph Theory	4 QH
MTH3530	Topics in Combinatorics	4 QH
MTH3534	Analysis of Algorithms	4 QH
MTH3535	Complexity Theory	4 QH
MTH3801	Seminar: Constructive Mathematics	4 QH

MTH3806	Readings in Algebra	4 Q
MTH3807	Seminar in Algebra	4 Q
MTH3811	Readings in Analysis	4 Q
MTH3812	Seminar in Analysis	4 Q
MTH3818	Seminar: Dynamical Systems	4 Q
MTH3821	Readings in Topology	4 Q
MTH3822	Seminar in Topology	4 Q
MTH3824	Readings in Geometry	4 Q
MTH3826	Readings in Statistics and Probability	4 Q
MTH3827	Seminar in Statistics	4 Q
MTH3836	Seminar in Combinatorics	4 Q
MTH3841	Readings in Philosophy of Science and Mathematics	4 Q
MTH3850	Doctoral Dissertation	0 Q
MTH3799	Doctoral Dissertation Continuation	0 Q

Physics

The Northeastern University Department of Physics offers opportunities for graduate students to work with internationally recognized faculty in a diverse range of front-line research programs in biophysics, condensed matter physics, and elementary particle physics.

The department offers both full- and part-time graduate programs leading to the MS degree and full-time programs leading to the PhD degree. Thesis work for the PhD degree may be undertaken in one of the department's research areas or in interdisciplinary areas such as material science and plasma physics. An additional option allows cooperative research in applied physics, in which the PhD thesis work is undertaken in a high-technology, medical, or nonprofit institution in the Boston area.

Professors

Stephen Reucroft, PhD, *University of Liverpool*,
Chairperson

Ronald Aaron, PhD, *University of Pennsylvania*

Petros N. Argyres, PhD, *University of California*,
Berkeley

Arun Bansil, PhD, *Harvard University*

Alan H. Cromer, PhD, *Cornell University*

William L. Faissler, PhD, *Harvard University*

Marvin H. Friedman, PhD, *University of Illinois*,
Urbana

David A. Garelick, PhD, *Massachusetts Institute of*
Technology

Marvin W. Gettner, PhD, *University of Pennsylvania*

Michael J. Glaubman, PhD, *University of Illinois*,
Urbana

Hyman Goldberg, PhD, *Massachusetts Institute of*
Technology

Walter Hauser, PhD, *Massachusetts Institute of*
Technology

Jorge V. José, PhD, *University of Mexico*

Robert P. Lowndes, PhD, *University of London*

Bertram J. Malenka, PhD, *Harvard University*

Pran Nath, PhD, *Stanford University*

Clive H. Perry, PhD, *University of London*

Eugene J. Saletan, PhD, *Princeton University*
 Carl A. Shiffman, PhD, *Oxford University*
 Jeffrey B. Sokoloff, PhD, *Massachusetts Institute of Technology*
 Yogendra N. Srivastava, PhD, *Indiana University*
 Michael T. Vaughn, PhD, *Purdue University*
 Eberhard von Goeler, PhD, *University of Illinois, Urbana*
 Allan Widom, PhD, *Cornell University*
 Fa Yueh Wu, PhD, *Washington University*

Associate Professors

George O. Alverson, PhD, *University of Illinois, Urbana*
 Paul M. Champion, PhD, *University of Illinois, Urbana*
 Marie Machacek, PhD, *University of Iowa*
 Robert S. Markiewicz, PhD, *University of California, Berkeley*

Assistant Professors

Narendra K. Jaggi, PhD, *University of Bombay*
 Alain Karma, PhD, *University of California, Santa Barbara*
 Jacqueline Krim, PhD, *University of Washington, Seattle*
 Ian Leedom, PhD, *Purdue University*
 Russell LoBrutto, PhD, *State University of New York, Buffalo*
 Sridhar Srinivas, PhD, *California Institute of Technology*

Research Associates

David H. Kaplan, PhD, *Cornell University*
 Jorge H. Moromisato, PhD, *Northeastern University*
 Zbigniew Ryzak, PhD, *Massachusetts Institute of Technology*
 J. Timothy Sage, PhD, *University of Illinois, Urbana*
 Guan-Hong Wu, PhD, *Northeastern University*
 Takahiro Yasuda, PhD, *Tsukuba University*

Areas of Advanced Study and Research

Biomolecular Physics

The biomolecular physics group is engaged in a variety of experimental programs in order to better understand the structure and function of biological molecules. Currently, heme containing proteins, such as hemoglobin, myoglobin, cytochrome-c and cytochrome P-450, are being investigated to help answer fundamental questions involving electron transport in biomolecules, the binding and release of small molecules to proteins and enzyme catalysis.

The primary techniques utilized in these studies involve laser light scattering. Both the inelastic (RAMAN) and the elastic (RAYLEIGH) light scattering are monitored in order to gain information about inner-molecular motions ranging from the very slow (classical) to the very fast (quantum mechanical) time regime. Large magnetic fields are also utilized in order to probe the effect of spin state changes of the heme iron atom on the biological reaction rates.

Experimental Condensed Matter Physics

Researchers in this area use a broad range of in-house experimental techniques, such as far infrared and laser RAMAN spectroscopy, and high-pressure and low-temperature devices, including superconducting quantum interference devices (SQUIDS), diamond anvil and solid helium. Researchers are also involved off campus in high magnetic field studies at the National Magnet Laboratory and in neutron spectroscopy studies at the Brookhaven and Oak Ridge National Laboratories and at the Institut Laue-Langevin in Grenoble.

Current research topics include surface physics and the wetting problem; infrared and optical studies of semiconductors, metals and metallic glasses as a function of temperature and pressure; transport phenomena in metals and semiconductors in low to very high magnetic fields; x-ray, optical, and Fermi surface studies of intercalated graphites; two-dimensional physics and localization in ultrathin metallic films; magneto-optical studies of two-dimensional electron superlattices and single interfaces; neutron scattering in two-dimensional magnetic systems and in weakly itinerant ferromagnets; infrared, RAMAN, and neutron spectroscopy of fast ion conductors; micro- and sub-millimeter wave studies of collective modes such as charge and spin density waves; high temperature and conventional superconductors.

Theoretical Condensed Matter Physics

Research interests of this group include statistical mechanics; theory of phase transitions; low-temperature physics; theory of Josephson junctions; quantum circuits; quantum optics; Fermi liquid theory; localization and percolation in disordered systems; soliton and chaotic solutions of nonlinear systems; charge density waves; magnetism, electromagnetic and elastic properties of solids, optical properties of metals; transport

theory; quantum chaos; transport properties of disordered systems; and high temperature superconductivity

Experimental High-Energy Physics

The high-energy experimental group is presently taking part in several major experimental efforts at three different centers for high-energy physics. One group is analyzing data from the magnetic calorimeter (MAC) that was in operation at the electron-positron colliding beam facility (PEP) at Stanford University. A second group is participating in the construction of a large multi-particle spectrometer, which will be used in one of the first experiments to be run at the Tevatron now being built at the Fermi National Accelerator Laboratory. This detector will have excellent photon-detecting ability and will be used to carry out several experiments of quantum chromodynamics. A third group is conducting a series of experiments at the Tevatron which examines charm production and decay characteristics for various incident particle beams. A fourth group is participating in the construction of a large experiment to run at the electron-positron colliding beam facility (LEP) being built at CERN in Geneva, Switzerland. When this facility goes into operation, it will be the leading electron-positron facility in the world.

Theoretical Elementary Particle Physics

Research interests cover a range of topics, including superstrings, unified gauge theories of weak, electromagnetic, and strong interactions; particle physics in the early universe; phenomenology of supersymmetrical models; supergravity unified models; lattice gauge theory; computational physics, phase transitions and spontaneous symmetry breaking; finite temperature effects in quantum chromodynamics; renormalization group analyses of coupled field systems; string theory and phenomenology of high-energy physics.

Research Facilities

The department is housed in the Dana Research Center, a modern, air-conditioned building with its own library, ample research laboratories, a machine and electronics shop, conference and seminar rooms, and faculty and graduate student offices. The department has its own computer facilities, as well as facilities providing access to the University Computer Center.

Faculty and graduate students are also currently engaged in a variety of experiments off campus: in con

Faculty and graduate students are also currently engaged in a variety of experiments off campus: in condensed matter experiments at the National Magnet Laboratory, the Brookhaven National Laboratory, the Oak Ridge National Laboratory, and the Laue-Langevin Institute, Grenoble, France; and in high-energy experiments at the Fermi National Accelerator Center (SLAC) and at the Large Electron Positron (LEP) collider facility at CERN, Geneva.

Procedure for Admission

All requests for information and application forms should be sent to the graduate coordinator of the Physics Department. Completed applications and related materials, such as transcripts, letters of recommendation, and Test of English as a Foreign Language (TOEFL) scores (where applicable) should also be sent to the graduate director. Graduate Record Examination (GRE) scores should be sent to the Graduate School of Arts and Sciences office.

In addition to meeting the general requirements of the Graduate School of Arts and Sciences, applicants for admission to the graduate programs must have had an undergraduate program that included the equivalent of at least twelve semester hours of upperclass physics beyond general physics and courses in calculus and ordinary differential equations.

To qualify as a regular student, the applicant should have completed upperclass courses in mechanics, electricity and magnetism, thermodynamics, modern physics, and quantum mechanics, as well as mathematical methods courses covering advanced calculus, linear vector spaces, and functions of a complex variable. Students whose background in one or more of these areas is weak may be required to satisfy prerequisites to the graduate courses by completing up to nine quarter hours of introductory courses.

Students with undergraduate majors in fields other than physics may be admitted as provisional students, with entry to the regular program conditional upon the satisfactory completion of an appropriate group of undergraduate courses. Except for the introductory courses, these courses do not carry regular graduate credit.

The applicant is strongly encouraged to take the GRE (both the aptitude section and the advanced physics section); scores should be sent to the Graduate School of Arts and Sciences office.

International students are required to present evidence of sufficient competence in the English language to pursue the graduate program. For students whose previous instruction has been in a language other than English, this is normally done by submitting to the Physics Department results of the TOEFL examination or other evidence in accordance with the Graduate School regulations.

Assistantships

A number of assistantships are available for full-time graduate students.

Teaching Assistantships

These awards offer a stipend plus a remission of tuition for a regular courseload in exchange for half-time work teaching in the undergraduate laboratories or equivalent work.

Tuition Assistantships

These awards provide remission of tuition for a regular graduate courseload in exchange for approximately eight hours per week of grading assignments or similar work. Holders of these awards are eligible to become teaching assistants if such positions become available.

Research Assistantships

These awards, normally given to advanced students, provide the same benefits as teaching assistantships in exchange for work (usually related to the student's thesis research) on one of the research projects in the department.

Physics Fellowships

The Physics Department awards four physics fellowships annually to students judged to be outstanding scholastically. These fellowships carry with them an honorarium, which is received in addition to the teaching or research assistantship stipend.

The Programs

The graduate programs in physics lead to the degrees of doctor of philosophy (PhD) and master of science (MS). In addition, the MS degree can be obtained with concentration in instrumentation or a concentration in optics. The PhD program requires a full-time commitment, but the MS programs can be pursued on either full-time or a part-time basis.

Each student admitted to the graduate program must be interviewed by a departmental advisor before registration for the first quarter at Northeastern, in order to assess the student's background and arrange for a suitable program of study.

The Master of Science Degree

Course Requirements

There are three options for the MS degree: the standard MS, the MS with a concentration in instrumentation, and the MS with a concentration in optics. Irrespective of the option chosen, forty-two quarter hours of graduate credit are required for the MS degree, of which up to twelve quarter hours may be transfer credit on departmental approval (subject to the general regulations of the Graduate School).

The MS degree options involve a common set of physics graduate courses, consisting of the following:

PHY 3601	Mathematical Methods A
PHY 3603	Classical Mechanics
PHY 3611, PHY 3612	Electromagnetic Theory A, B
PHY 3621, PHY 3622	Quantum Theory A, B

In addition to these required core courses, the three degree options have the following additional requirements:

MS (Standard Degree)

PHY 3605	Computational Physics
PHY 3623	Quantum Theory C

The remaining twelve quarter hours may be chosen from any courses carrying graduate credit in physics, biology, chemistry, engineering, mathematics, or psychology. Of these twelve quarter hours, not more than nine quarter hours of credit may be used in approved introductory physics courses (PHY 1305, Thermodynamics and Kinetic Theory; PHY 1412, Plasma Physics; PHY 1413, Introduction to Nuclear Physics; PHY 1414, Introduction to Solid State Physics; PHY 1415 and PHY 1416, Quantum Mechanics I and II; and PHY 3551 and PHY 3552, Electronics for Scientists I and II).

MS with a Concentration in Instrumentation

PHY 3605	Computational Physics
PHY 3551, PHY 3552	Electronics for Scientists I and
PHY 3557	Advanced Laboratory
PHY 3561	Project Laboratory

MS with a Concentration in Optics

PHY 3623	Quantum Theory C
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In addition, students must take twelve quarter hours of credit from the following courses:

ECE 3511, ECE 3512	Lasers I, II
ECE 3513	Laser Applications
ECE 3661	Optical Storage and Display
ECE 3662, ECE 3663	Electro Optics I, II
ECE 3664, ECE 3665, ECE 3666	Fourier Optics I, II, III
ECE 3667, ECE 3668, ECE 3669	Optical Properties of Matter I, II, III
ECE 3672, ECE 3673	Principles of Optical Detectors I, II

The remaining four quarter hours may be chosen from any courses carrying graduate credit in physics or from optics-related courses.

Sample Course Program for Part-Time Students for Standard MS Degree:

	Fall	Winter	Spring
Year I	Elective	PHY 1415 Quantum Mechanics I	PHY 1416 Quantum Mechanics II
Year II	PHY 3601 Mathematical Methods A	PHY 3603 Mathematical Methods B	PHY 3605 Classical Mecha
Year III	PHY 3611 Electromagnetic Theory A	PHY 3612 Electromagnetic Theory B	Elective*
Year IV	PHY 3621 Quantum Theory A	PHY 3622 Quantum Theory B	PHY 3623 Quantum Theory C

* Students intending to enter the PhD program should take PHY 3613, Electromagnetic Theory C, in the spring quarter.

A part-time student can expect to complete the requirements for the MS degree in four years at the rate of one three- or four-quarter hour course per quarter, or sooner by taking extra courses in some years.

The Doctor of Philosophy Degree

The program for the PhD degree consists of required coursework, a qualifying examination, the completion of a dissertation based upon original research performed by the student, and a final oral examination.

Course
Requirements

The required courses are grouped into two sets: part 1 and part 2. Part 1 courses are taken prior to the qualifying examination, and part 2 courses are taken after passing the qualifying examination. In addition, it is strongly recommended that at least one advanced graduate course from the set in part 3 be taken after the satisfactory completion of the part 2 courses; at his/her option, a student may take the part 3 courses on a pass/fail basis.

The three sets of courses are as follows:

Part 1

PHY 3601, PHY 3602	Mathematical Methods A, B
PHY 3603	Classical Mechanics
PHY 3611, PHY 3612, PHY 3613	Electromagnetic Theory A, B, C
PHY 3621, PHY 3622, PHY 3623	Quantum Theory A, B, C

Part 2

PHY 3624	Advanced Quantum Theory
PHY 3631, PHY 3632, PHY 3633	Statistical Physics A, B, C
PHY 3641, PHY 3642	Solid State Physics A, B
PHY 3651, PHY 3652	Particle & Nuclear A, B
PHY 3605	Computational Physics

Part 3

PHY 3643, PHY 3644, PHY 3645	Advanced Solid State Physics A, B, C
PHY 3653, PHY 3654, PHY 3655	Particles, Currents & Fields A, B, C
PHY 3661, PHY 3662, PHY 3663	Many Body A, B, C
PHY 3671, PHY 3672, PHY 3673	General Relativity; Relativistic Astrophysics; Quantum Gravity

Sample Course Program for Full-Time Students*

	Fall	Winter	Spring
Year I	PHY 3601 Mathematical Methods B	PHY 3603 Classical Mechanics	PHY 3502 Mathematical Model B
	PHY 3611 Electromagnetic Theory A	PHY 3612 Electromagnetic Theory B	PHY 3613 Electromagnetic Theory C
	PHY 3621 Quantum Theory A	PHY 3622 Quantum Theory B	PHY 3623 Quantum Theory C
Year II	PHY 3631 Statistical Physics A	PHY 3632 Statistical Physics B	PHY 3633 Statistical Physics C
	PHY 3624 Advanced Quantum	PHY 3651 Particle & Nuclear A	PHY 3652 Particle & Nuclear B
	PHY 3605 Computation Physics	PHY 3641 Solid State Physics A	PHY 3642 Solid State Physics B

*A student who is required to take one or more introductory courses to satisfy prerequisites will normally need three years to complete the required courses for the PhD. Individual programs must be worked out in consultation with a departmental advisor.

Grade Requirements

The grade requirements for the successful completion of part 1, and hence for entry into the qualifying examination, are at least a B average in the part 1 courses. The grade requirements for the successful completion of part 2, and hence for formal entry into the thesis research, are at least a B average in the part 2 courses.

The part 2 courses, including any makeup of grade average deficiencies (see below), must be completed within two calendar years of passing the qualifying examination. Under mitigating circumstances, a student may petition the Committee on Academic Standing of Graduate Students (CASGS) to extend this time limit. Such a petition must be filed and approved by CASGS before the required two-year period from the successful completion of the qualifying examination has elapsed in order for the student to remain in the graduate program.

In the event that a student fails to achieve the required B average for the part 1 courses, he/she must petition CASGS in order to remain in the graduate program. After carefully reviewing the academic performance of any student filing such a petition, CASGS will either not approve the petition or will place the student on academic probation pending the successful completion of a program established by CASGS for the student to clear his/her grade average deficiency.

In the event that a student fails to achieve the required B average for the part 2 courses, he/she must petition CASGS in order to remain in the graduate program. The final decision of CASGS will then be determined by the result of a special examination in the course(s) determined by CASGS to be the most serious contribution(s) to the grade average deficiency. Whenever possible, the examination(s) will be prepared and graded by the student's instructor(s) in the course(s) concerned.

Qualifying Examination

In addition to the grade requirements described above, the qualifying examination is also a requirement for the PhD degree. The qualifying examination, which may include both written and oral parts, will be based on only the material covered in the part 1 courses. The examination will be given only once each year, a week before the orientation week preceding the fall quarter. A student may have only two attempts to pass the qualifying examination. In the event that a student fails the qualifying examination twice, he/she will automatically be terminated from the graduate program.

All students who have completed part 1 courses with a B average or who have successfully completed an academic probation program established by CASGS are eligible to take the qualifying examination and must take the examination at the first available opportunity. Upon successful completion of the qualifying examination requirement, a student must acquire a research advisor.

Part-time students who wish to become PhD candidates may so indicate by a petition to the graduate committee of the department; the petition must include a timetable for completing the required courses and taking the qualifying examination.

Advanced Standing

A student may be admitted into the PhD program with advanced standing based upon graduate courses taken elsewhere. Transfer credit will depend on department

approval (subject to the general regulations of the Graduate School). However, the PhD qualifying examination must be taken at Northeastern, and the residence requirement must be satisfied.

Residence Requirement

A student who has completed the required coursework and passed the qualifying examination becomes a doctoral degree candidate and must satisfy the residence requirement by one year of full-time graduate work.

Teaching Requirement

Some teaching experience is required. This requirement may be satisfied by at least one year of service as a teaching assistant or by other teaching duties.

Work-Study Option

A PhD candidate may spend one year in a participating high-technology, industrial, or government laboratory immediately after passing the PhD qualifying examination. In this program, the student is expected to remain in touch with the University by taking one course per quarter at the University and by frequent contact with a faculty advisor. After the one-year paid internship, the student returns to the University to do the dissertation.

Eligibility for this program is contingent on acceptance both by the department and by the external laboratory involved.

Dissertation

The student should arrange for a dissertation advisor prior to taking the qualifying examination.

The student may choose a field of research:

- In one of the research areas in the department, under direct supervision of the advisor.
- In an interdisciplinary research field involving another research area of the University, under the direct supervision of a researcher in that field. In this case, an interdisciplinary committee is formed consisting of the direct supervisor, the department advisor, and one other member of the department.
- In an area of applied research in one of the industrial or high-technology laboratories associated with the department's industrial PhD program. The direct supervisor is associated with the institution where the research is performed. In this case, a dissertation advisory committee is established consisting of the direct supervisor, the department advisor, and one other member of the department.

An outline of the dissertation must be approved by the department at least eight months before the final oral examination.

Final Oral Examination

The final oral examination is held in accordance with the Graduate School regulations.

Course Listings

The following is a listing of all departmental course offerings. Please refer to the *Graduate Schools Course Descriptions* for course descriptions and relevant prerequisites.

Course No.	Course Name	Credit
PHY 3401	Radiation Physics	2 QH
PHY 3402	Radiation Biology	2 QH
PHY 3551	Electronics for Scientists I	4 QH
PHY 3552	Electronics for Scientists II	4 QH
PHY 3557	Graduate Advanced Laboratory	4 QH
PHY 3561	Graduate Project Laboratory	4 QH
PHY 3601	Mathematical Methods A	4 QH
PHY 3602	Mathematical Methods B	4 QH
PHY 3603	Classical Mechanics	4 QH
PHY 3605	Computational Physics	4 QH
PHY 3611	Electromagnetic Theory A	3 QH
PHY 3612	Electromagnetic Theory B	3 QH
PHY 3613	Electromagnetic Theory C	3 QH
PHY 3621	Quantum Theory A	4 QH
PHY 3622	Quantum Theory B	4 QH
PHY 3623	Quantum Theory C	4 QH
PHY 3624	Advanced Quantum Theory	4 QH
PHY 3631	Statistical Physics A	3 QH
PHY 3632	Statistical Physics B	3 QH
PHY 3633	Statistical Physics C	3 QH
PHY 3641	Solid State Physics A	4 QH
PHY 3642	Solid State Physics B	4 QH
PHY 3643	Advanced Solid State Physics A	4 QH
PHY 3644	Advanced Solid State Physics B	4 QH
PHY 3645	Advanced Solid State Physics C	4 QH
PHY 3651	Particle & Nuclear A	4 QH
PHY 3652	Particle & Nuclear B	4 QH
PHY 3653	Fields, Particles and Currents A	4 QH
PHY 3654	Fields, Particles and Currents B	4 QH
PHY 3655	Fields, Particles and Currents C	4 QH
PHY 3661	Many Body Theory A	4 QH
PHY 3662	Many Body Theory B	4 QH
PHY 3663	Many Body Theory C	4 QH
PHY 3671	Foundations of General Relativity	4 QH
PHY 3672	Relativistic Astrophysics and Cosmology	4 QH
PHY 3673	Quantum Gravity	4 QH

PHY 3811	Reading Course	1 Q
PHY 3812	Reading Course	1 Q
PHY 3813	Reading Course	1 Q
PHY 3821	Reading Course	2 Q
PHY 3822	Reading Course	2 Q
PHY 3823	Reading Course	2 Q
PHY 3831	Reading Course	3 Q
PHY 3832	Reading Course	3 Q
PHY 3833	Reading Course	3 Q
PHY 3841	Reading Course	4 Q
PHY 3842	Reading Course	4 Q
PHY 3843	Reading Course	4 Q
PHY 3890	Master's Thesis I	4 Q
PHY 3891	Master's Thesis II	4 Q
PHY 3895	Doctoral Dissertation	0 Q
PHY 3798	Master's Thesis Continuation	0 Q
PHY 3799	Doctoral Dissertation Continuation	0 Q

Political Science

Although it is one of the oldest disciplines, political science is one of the most recently developed social sciences. As a discipline, political science entails the study of the origins, structures, and evolution of governments; the decision-making processes of political institutions; the means by which governments seek to manage conflicts; and the ways in which governments ought to be constituted and function.

Political science adopts the scientific, or quantitative, approach, when appropriate, yet is also concerned with historical developments, institutional descriptions, political trends, and normative values. In a very real sense, it is a blend of the oldest and newest methodologies and draws on other relevant disciplines to further its research and development.

The purpose of graduate education in political science is to train students to analyze societal and political dynamics in rigorous ways and to prepare them for futures in a wide array of careers, ranging from government to academia to political journalism.

Professors

Robert E. Gilbert, PhD, *University of Massachusetts, Chairperson*

Robert L. Cord, PhD, *Syracuse University*

Suzanne Ogden, PhD, *Brown University*

David E. Schmitt, *Edward W. Brook Professor*, PhD, *University of Texas*

Associate Professors

L. Gerald Bursey, PhD, *Harvard University*

Minton F. Goldman, PhD, *Fletcher School of Law and Diplomacy*

Eileen L. McDonagh, PhD, *Harvard University*

David Rochefort, PhD, *Brown University*

Morris A. Shepard, PhD, *University of Connecticut*

Assistant Professors

Leslie Elliot Armijo, PhD, *University of California, Berkeley*

Christopher J. Bosso, PhD, *University of Pittsburgh*

David A. Dickson, PhD, *Harvard University*

William D. Kay, PhD, *Indiana University*

William F. S. Miles, PhD, *Fletcher School of Law and Diplomacy*

Margaret Paternek, PhD, *University of Toronto*

John Portz, PhD, *University of Wisconsin, Madison*

John F. L. Ross, PhD, *London School of Economics*

Denis J. Sullivan, PhD, *University of Michigan*

Part-Time Faculty

Harvey Boulay, PhD, *Boston University*

Rev. Edward F. Boyle, MBA, *Amos Tuck School of Business Administration*

Holly M. Carter, PhD, *Massachusetts Institute of Technology*

Elizabeth Dodson-Cole, PhD, *Brandeis University*

Richard M. Gladstone, MCP, *University of Cincinnati*

Paul T. Heffron, PhD, *Fordham University*

Kathleen M. Herr, PhD, *Brandeis University*

Earl W. Jackson, JD, *Harvard University*

Robert C. Johnson, Jr., JD, *Cornell University*

Paul G. Keough, MPA, *Northeastern University*

Claude G. Lancome, JD, *Harvard Law School*

Edward Lynch, MS, *Columbia University*

Robert H. McClain, Jr., MS, *University of Denver*

John J. McGinn, MPA, *Northeastern University*

Richard B. Morrison, EdD, *Boston University*

Andrew S. Natsios, MPA, *Harvard University*

Laurence Onie, MPA, *University of Oklahoma*

J. Richard Poulin, MPA, *University of Oklahoma*

Carl A. Prussing, MPA, *University of New Hampshire*

Donald J. Reaves, PhD, *Kent State University*

Patricia M. Rivard, MBA, *University of Lowell*

Marvin M. Siflinger, MPA, *Syracuse University*

Michael L. Simmons, MPA, *Northeastern University*

Marilyn Swartz-Lloyd, MCP, *Yale University*

Joseph D. Warren, PhD, *Brandeis University*

Research

The research interests of political science faculty members at Northeastern University are varied, far-reaching and draw on multiple methodologies. Recent faculty publications include an analysis of the political ambitions of men and women in political parties; studies of American health and social welfare policies;

studies of American health and social welfare policies; an analysis of the evolution of government regulation of chemical pesticides; an examination of American foreign policy toward sub-Saharan Africa; studies of the politics of Martinique, Niger, and mainland China; an analysis of Soviet policy toward Poland; a psychological investigation of the Coolidge presidency; a study of congressional action on women's suffrage during the Progressive Era; an examination of the processes of political socialization and attitude change; an analysis of the separation of church and state controversy; an investigation that links stress and achievement patterns to mortality levels of American Presidents; an examination of China's role at the United Nations; an examination of the impact of television debates on the outcome of presidential elections and of television on the exercise of presidential power; an analysis of American policy toward Soviet intervention in Afghanistan; a study of the Kennedy Administration's civil rights record; an examination of the public bureaucracy; and an exploration of Third World politics.

The published research of the faculty is complemented by its ongoing research efforts. Faculty members currently are conducting research in such diverse areas as the American mass media and the famine in Ethiopia; political development in India; attitudinal structures of scholars and their views toward political reform; leadership changes in China; women and trade unionism; American aid to Egypt; procedural due process under the Fourteenth Amendment; patterns of gender and race in American political parties; ethnic pressure groups in the American foreign policy-making process; American mental health policy; the presidencies of Lincoln and Franklin Roosevelt; and ethnic conflict in the United States and Northern Ireland.

Admission

Master of Arts

In addition to the admissions requirements listed on page 23, applicants for the master of arts program should have at least six semester hours of political science, government, or related courses. Three letters of recommendation, undergraduate transcripts, a personal essay, and the aptitude scores from the Graduate Record Exam (GRE) are required before applications will be processed. In addition, Test of English as a Foreign Language (TOEFL) scores are required for international applicants.

Master of Public Administration

Different procedures govern admission for those with public sector status and those with non-public sector status. Public sector status includes those working for federal, state, city, county, or town governments; military personnel and veterans (regular and reserve); and those working for nonprofit or public service organizations. All others are considered non-public sector applicants.

Public sector applicants must be employed full-time in the public sector at the time of admission and are automatically admitted as part-time provisional students. Matriculation into the program is granted upon obtaining a B average (3.000) in the first four Public Administration courses, two of which must be core courses.

All public sector applicants must submit a complete application form, application fee, official transcript from each college or university where undergraduate graduate records or credits were earned, and a letter confirming their public sector status.

Non-public sector applicants should demonstrate a clear and strong interest in public administration. In addition to the admissions requirements listed on page 23, applicants must furnish the aptitude scores from the Graduate Record Exam (GRE) and a statement supporting their interest in this field and outlining their reasons for wishing to enter this program. Although most candidates for the MPA program come with a major concentration in the social sciences, such a background is not mandatory, and applicants from other fields, such as engineering, law, sciences, or business administration, are considered for candidacy. TOEFL scores are required for international applicants.

All applicants to political science or public administration graduate programs, including persons seeking special (non-degree) status, must follow the regular admissions procedures.

International Student Admission/English Language Assessment

In order to ensure that all international students have the English language skills necessary for graduate-level work, the Department of Political Science has a carefully devised plan of study. All international students recommended for admission initially receive a conditional status, pending English language diagnostic assessment. Conditional status indicates that the student

may not be admitted to a degree candidacy until specified language requirements are met.

Diagnostic assessment is conducted by the English Language Center in conjunction with the Department of Political Science prior to registration for courses. On the basis of English language test assessment, international students are advised on an appropriate plan of study. Students who are determined as having the requisite English language skills for graduate work immediately obtain a regular student status and are admitted to graduate coursework and degree candidacy. Students whose English language assessment indicates a need for additional English language study are advised on the combination of graduate courses and English language courses needed for at least the first year of study. In cases in which international students demonstrate a pressing need for English language study, it is required that English language courses be taken prior to any graduate-level work in the Department of Political Science.

International students who have a degree from an institution abroad where the medium of instruction is English or who have an undergraduate degree from an American college or university (as stated on page 22) are exempt from the above stated language assessment.

The Master of Arts Degree

Program

Forty-two quarter hours of academic work are required. With the approval of the MA committee chairperson, a maximum of six quarter hours may be selected from graduate courses in other departments and a maximum of eight quarter hours may be selected from advanced undergraduate courses. The undergraduate courses also require the approval of the Director of the Graduate School of Arts and Sciences.

A thesis is optional with the approval of the MA committee. If approved, a thesis carries up to nine quarter hours of credit.

Comprehensive Examination

The comprehensive examination is held in accordance with the general Graduate School regulations. Every candidate for the degree must pass examinations in two fields as prescribed by the department. Degree candidates are limited to two attempts at successful examinations in each field. Choice may be made from the

following concentration areas: American government and politics, comparative government and politics, international relations, political theory, and public administration.

MA Concentrations

American Government and Politics

The field of American government and politics is concerned with developing an understanding of the structure of American political institutions as well as those political processes that result from interactions among and within institutions. Students concentrating in this field should gain an appreciation for the historical foundations of American political institutions and processes, an understanding of the normative issues revolving around the difficulties involved in making the ideals of democracy practical realities, and a thorough knowledge of basic institutions such as the presidency, Congress, and the judiciary.

Comparative Government and Politics

The comparative government curriculum is intended to provide students with an opportunity to gain an understanding of the methods of comparative political inquiry and an in-depth mastery of political organization and behavior in selected geographical areas. This curriculum includes the study of theoretical and cross-national problems, contemporary political development, and institutional analyses of different types of governmental systems in different regional settings.

International Relations

The field of international relations examines the actors, issues, and actions that have impacts beyond national boundaries, in order to define these phenomena, explain the historical and present patterns of their occurrence, and illuminate the contexts in which certain patterns are likely to be experienced. Specializations within the field of international relations include issues of war and peace, U.S.-Soviet relations, and regional area studies (e.g., Middle East, Africa, Latin America, East and West Europe).

Political Theory

The field of political theory encompasses the wide span of historical and intellectual contributions delineating the nature of humans in relation to social, economic, political, and legal institutions, as well as psychological and cultural factors. Both the context in which the

theories were generated and the applications and consequences of those theories are explored. Thus the field of political theory analyzes the intellectual legacy of our Western civilization from the vantage point of both a theoretical and a practical orientation.

Public Administration

The public administration curriculum is designed to give students the opportunity to develop an understanding of what is required to function effectively as a public manager. It integrates theoretical foundations with some practical skills and seeks to promote a sense of the ethical and democratic responsibility entailed in being a public manager. It focuses attention on the academic study of public administration as a subfield of political science from the perspective of public organization and management, public finance and budgeting, public personnel administration, state and urban government, policy sciences, and development administration.

The Master of Public Administration Degree

Program Fifty-four quarter hours of academic work are required. All students must complete the following eleven courses:

- CPOL 3502 Seminar in American Government
- CPOL 3600 Introduction to Public Administration
- CPOL 3601 Public Personnel Administration
- CPOL 3602 Organizational Theory & Management
- CPOL 3603 Public Budgeting
- CPOL 3604 Techniques of Policy Analysis
- CPOL 3605 Quantitative Techniques for Public Administration 1
- CPOL 3606 Quantitative Techniques for Public Administration 2
- CPOL 3607 Quantitative Techniques 3: Computer Applications
- CPOL 3608 Public and Non-Profit Financial Management
- CPOL 3610 Methods of Economic Analysis for Public Administrators

At least seven additional courses must be selected from courses designated as public administration electives. A maximum of four courses may be selected from courses in the Master of Arts program in political science or from other graduate programs at Northeastern as substitute elective courses. These courses must have the prior approval of the MPA committee chairperson.

MPA Concentrations

Students may elect to declare an MPA concentration after completing the core courses. The concentrations seek to provide integrated course offerings in key public administration fields. Each concentration area is coordinated by a full-time faculty member, who also serves as advisor to students in his/her area of concentration. There are six required courses in each concentration, as well as a variety of electives that may be selected on the basis of professional or academic interests. Concentration areas include the following:

Public Budgeting and Financial Management

The Public Budgeting and Financial Management concentration is designed to provide students with the necessary skills to be effective financial managers in public organizations. Those choosing this concentration study the problems of government accounting, financial reporting, budgeting in the public sector, revenue scarcity, and analytical and managerial techniques for financial management. The student will be expected to understand the political, economic, managerial, and ethical dimensions of the subject matter.

Public Personnel Administration

Public Personnel Administration as an area of study is dynamic and diverse. This concentration is designed to allow the student to become familiar with, and master the technical skills involved in the functions of the personnel manager, and to acquaint the student with the political and social issues that have become part of the purview of all public managers. The courses required for the concentration, therefore, combine skills (recruitment, selection, placement, etc.) with issue awareness (affirmative action, gender issues, ethics, etc.). Also included are theoretical topics to help prepare the student for a career in personnel administration in the public service.

Development Administration

The Development Administration concentration is designed to give students and mid-career officials from the Third World a mastery of the issues, techniques, and skills involved in the planning and administration of development programs and projects. It also aims to help prepare American students and public administrators with a professional interest in develop-

ment for such a career. The managerial, political, and economic dimensions are particularly emphasized.

Policy Analysis and Public Management

During the past decade, the demand for effectiveness and accountability in the public sector has grown dramatically and, with it, the demand for people with the diverse skills required to analyze, implement, and evaluate public policies. The Policy Analysis and Public Management concentration is designed to enable students to perform these tasks and use the information produced through policy analysis in management decision making. The orientation of the concentration is pragmatic, applied, and interdisciplinary. Students are given an opportunity to develop an understanding of economic analysis and the use of computers in public sector settings, along with training in the more traditional areas of policy implementation and evaluation. The concentration also provides a grounding in the functions and practice of management.

Health Administration and Policy

The concentration in Health Administration and Policy is intended to help provide students with a broad understanding of the workings of the contemporary American health system and the necessary competencies to function as a manager, planner, or analyst within the system. One aspect of the curriculum of required courses directs attention to systemic topics, such as the framework of public policy that structures and regulates the delivery of health services, and the complex of public and private economic relationships by which these services are financed. A second emphasis is development of the practical skills and knowledge base required for the effective practice of health administration in public health agencies, hospitals, and other health care organizations.

Off-Campus Feility

With the cooperation of the Federal Executive Board, the Department of Political Science offers its master of public administration program primarily at the John F. Kennedy Building in downtown Boston. This program is primarily for individuals employed in federal, state, or local civil services and for those who plan on a career in the public sector. Courses are normally given in the evening.

Course Listings

The following is a listing of all departmental course offerings. Please refer to the *Graduate Schools Course Descriptions* for course descriptions and relevant prerequisites.

Course No.	Course Name	Credits
POL 3500	Scope and Methods of Political Science	3
POL 3502	Seminar in American Government	3
POL 3504	Political Psychology & Socialization	3
POL 3506	Politics & Mass Media	3
POL 3508	American Legislative Process	3
POL 3510	Theories of American Political Participation	3
POL 3512	American Constitutional Law 1	3
POL 3514	American Constitutional Law 2	3
POL 3516	The Presidency	3
POL 3518	American Electoral Behavior	3
POL 3519	Campaigns and Elections	3
POL 3520	The Judiciary	3
POL 3522	Political Parties and Elections	3
POL 3523	Interest Groups	3
POL 3524	Civil Rights	3
POL 3526	Procedural Due Process	3
POL 3531	Models of Political Systems	3
POL 3533	Eurocommunism	3
POL 3535	Parliamentary Democracy in Western Europe	3
POL 3537	Comparative Communism	3
POL 3539	European Political Parties	3
POL 3541	European Legislative Systems	3
POL 3543	European National Executives	3
POL 3545	Government & Politics in the Middle East	3
POL 3547	Government & Politics in North Africa & the Middle East	3
POL 3550	Government & Politics of the United Kingdom & Northern Ireland	3
POL 3551	Seminar in International Relations	3
POL 3552	International Political Economy	3
POL 3553	Government & Politics in Germany	3
POL 3554	Government & Politics in France	3
POL 3555	International Organization	3
POL 3556	China in Revolution	3
POL 3557	Soviet-Chinese Relations	3
POL 3558	Asia & Politics of Development	3
POL 3559	Government & Politics of Latin America	3
POL 3560	Politics of the Developing Nations	3
POL 3561	Great Powers & the Middle East	3
POL 3562	U.S.-Soviet Relations	3
POL 3563	U.S.-Far East Relations	3
POL 3564	China's Foreign Policy	3
POL 3565	Soviet Relations with Eastern Europe	3
POL 3566	Chinese Politics	3
POL 3567	Japanese Politics	3
POL 3568	Sub-Saharan African Politics	3
POL 3569	Decision Making in U.S. Foreign Policy	3
POL 3570	American Foreign Policy	3

POL 3571	Ethnic Political Violence	3 QH
POL 3572	Problems of World Order 1	3 QH
POL 3573	Problems of World Order 2	3 QH
POL 3574	American National Security Policy	3 QH
POL 3575	Arab-Israeli Dispute	3 QH
POL 3576	War in International Perspective	3 QH
POL 3578	Soviet Foreign Policy	3 QH
POL 3580	The United Nations	3 QH
POL 3581	International Peace Keeping	3 QH
POL 3583	International Law	3 QH
POL 3584	Regional Organizations	3 QH
POL 3585	The Atlantic Community	3 QH
POL 3586	Nationalism	3 QH
POL 3587	Politics of Revolution & Change	3 QH
POL 3589	Terrorism, Violence & Politics	3 QH
POL 3590	Crisis Politics in Democracies and Dictatorships	3 QH
POL 3591	Totalitarianism	3 QH
POL 3593	Ancient & Medieval Political Thought	3 QH
POL 3594	Modern Political Thought	3 QH
POL 3595	Contemporary Political Theory	3 QH
POL 3596	Marxism	3 QH
POL 3597	Trends in American Political Thought	3 QH
POL 3600	Introduction to Public Administration	3 QH
POL 3601	Public Personnel Administration	3 QH
POL 3602	Organizational Theory & Management	3 QH
POL 3603	Public Budgeting	3 QH
POL 3604	Techniques of Policy Analysis	3 QH
POL 3605	Quantitative Techniques for Public Administrators I	3 QH
POL 3606	Quantitative Techniques for Public Administrators II	3 QH
POL 3607	Quantitative Techniques III: Computer Applications	3 QH
POL 3608	Public and Non-Profit Financial Management	3 QH
POL 3610	Methods of Economic Analysis for Public Administrators	3 QH
POL 3611	Intergovernmental Relations	3 QH
POL 3613	Constitutional Law in Public Administration	3 QH
POL 3614	Administrative Ethics in Public Management	3 QH
POL 3615	Development Administration	3 QH
POL 3616	State Government	3 QH
POL 3617	Industrial Policy	3 QH
POL 3618	Problems in Urban Planning	3 QH
POL 3619	Techniques of Urban Planning	3 QH
POL 3620	Politics of State & Urban Planning	3 QH
POL 3621	Problems of Urban Development	3 QH
POL 3622	Urban Government	3 QH
POL 3623	Transportation Policy	3 QH
POL 3624	Problems of Community Development	3 QH
POL 3625	Collective Bargaining and Labor Relations in the Public Sector	3 QH
POL 3626	Grantsmanship	3 QH
POL 3629	Computers & Public Administration	3 QH
POL 3630	Health Administration	3 QH
POL 3631	Urban Development	3 QH
POL 3632	Public Fiscal Management	3 QH
POL 3634	Functions & Techniques of Public Management	3 QH
POL 3635	Environment & Energy Policy	3 QH

POL 3636	Comparative Public Policy	3 Q
POL 3637	Comparative Public Administration	3 Q
POL 3638	Marketing for Public Managers	3 Q
POL 3639	Federal Administration Law	3 Q
POL 3641	Techniques of Program Evaluation	3 Q
POL 3642	Management Planning and Decision Making	3 Q
POL 3643	Organizational Psychology & Behavior	3 Q
POL 3644	Public Policy Issues in Human Services	3 Q
POL 3645	Program Implementation	3 Q
POL 3646	Position Management	3 Q
POL 3647	Manpower Policy & Administration	3 Q
POL 3648	Legal Topics for Health Administration	3 Q
POL 3649	Regulatory Administration	3 Q
POL 3650	Group Dynamics	3 Q
POL 3651	Legal Issues in Public Finance & Budgeting	3 Q
POL 3652	Civil Liberties in Public Administration	3 Q
POL 3653	Survey Research for Public Administration	3 Q
POL 3654	Computer Software for Public Administrators	3 Q
POL 3655	Politics & Administration in Cities & Towns	3 Q
POL 3656	Business-Government Relations	3 Q
POL 3657	Organizational Analysis	3 Q
POL 3658	State & Local Finance & Budgeting	3 Q
POL 3659	Municipal Finance	3 Q
POL 3660	Development Planning	3 Q
POL 3661	Municipal Law	3 Q
POL 3662	Comparative Urban Government & Administration	3 Q
POL 3663	Techniques of Public Budgeting	3 Q
POL 3664	Contemporary Issues in Public Finance and Budgeting	3 Q
POL 3665	Women in Public Management	3 Q
POL 3666	Housing Crisis	3 Q
POL 3667	Equal Opportunity in Public Administration	3 Q
POL 3668	Legal Issues in Public Personnel Administration	3 Q
POL 3670	Public Relations in Public Administration	3 Q
POL 3671	Social Welfare Policy & Administration	3 Q
POL 3672	Policy Issues & Administration in Mental Health	3 Q
POL 3673	Career Development	3 Q
POL 3674	Federal, State & Local Financing Relations	3 Q
POL 3675	Health Policy & Politics	3 Q
POL 3676	Practices in Self-Development in Public Management	3 Q
POL 3677	Elder Services Policy & Administration	3 Q
POL 3678	Federal Bureaucracy	3 Q
POL 3679	Contemporary Issues in Third World Development	3 Q
POL 3690	Topical Seminar	3 Q
POL 3696	Politics of Public Finance & Budgeting	3 Q
POL 3697	Seminar in Public Personnel Administration	3 Q
POL 3698	Case Studies in Policy Analysis	3 Q
POL 3699	Seminar in State & Urban Administration	3 Q
POL 3884	Assigned Readings	1 Q
POL 3886	Assigned Readings	3 Q
POL 3890	Assigned Readings	6 Q
POL 3891	Internship	3 Q
POL 3892	Internship Readings & Analysis	6 Q
POL 3895	Thesis	6 Q
POL 3798	Master's Thesis Continuation	0 Q

Psychology

The Department of Psychology has developed extensive programs in research and training in experimental psychology and in applied behavior analysis. The guiding principles are:

- Progress in the scientific analysis of behavior not only is important in its own right but also governs the application of psychology to such fields as education, habilitation, medicine, and social planning.
- Research into many of the facets of human and animal behavior requires a wide range of methods and knowledge; problems for investigation often fail to respect the boundaries between disciplines.
- The study of behavior with methods of the natural sciences frequently demands sophisticated instrumentation for control of the environment and measurement of the behavior.
- Training in experimental psychology must be built around a series of apprenticeships in which the student collaborates with proved scholars and scientists.

In addition to developing the student's research talents, the program fosters and provides opportunity for the acquisition of expertise in teaching behavioral science.

Chairperson

Leon J. Kamin, PhD, *Harvard University*

Professors

John C. Armington, PhD, *Brown University (Professor Emeritus)*

Stephen Harkins, PhD, *University of Missouri*

Harlan Lane, PhD, *Doc es Lettres, Harvard University*

Joanne L. Miller, PhD, *University of Minnesota*

Bertram Scharf, PhD, *Harvard University*

Alexander A. Skavenski, PhD, *University of Maryland*

Harold S. Zamansky, PhD, *Harvard University*

Associate Professors

Edward A. Arees, PhD, *University of Massachusetts*
Martin Block, PhD, *University of Pittsburgh*
Roger F. Brightbill, PhD, *Harvard University*
Perrin S. Cohen, PhD, *Columbia University*
Judith A. Hall, PhD, *Harvard University*
Charles Karis, PhD, *Boston University*
Harry A. Mackay, PhD, *Queen's University*
Adam Reeves, PhD, *City University of New York*
James R. Stellar, PhD, *University of Pennsylvania*

Adjunct Professor

Margaret Bauman, MD, *Medical College of Pennsylvania*

Assistant Professors

Jane Bybee, PhD, *Yale University*
Julie K. Norem, PhD, *University of Michigan*
Nancy N. Soja, PhD, *Massachusetts Institute of Technology*

Clinical Associate Professor

Karen Gould, PhD, *University of Kansas*

Adjunct Associate Professors

Beatrice H. Barrett, PhD, *Purdue University*
Robert Bass, PhD, *Brown University*
Lawrence T. Stoddard, PhD, *Columbia University*

Adjunct Assistant Professors

Renee Briggs, PhD, *Boston University*
Charles Hamad, PhD, *University of Kansas*
William L. Holcomb, MS, *Northeastern University*
Myrna Libby, PhD, *Brown University*

Senior Research Scientist

Helen Mahut, PhD, *McGill University*

Research

Research conducted by members of the Psychology Department falls into five general areas: language (including American Sign Language) and cognition; learning, motivation, and behavior analysis; neuropsychology and biological psychology; experimental personality and social psychology; and sensation and perception. Each of these is evident among the research vignettes provided on pages 143-145. However, the list is arranged in the alphabetical order of faculty surnames to allow easy identification of a sample of the research performed by a particular faculty member.

This reflects the importance to the program of the mutuality of interests that underlies the apprentice relationship between student and advisor. In addition, particular research projects often are not easily classified in broad traditional terms; their specific foci shift as they progress, and collaborations evolve. The reader should consult the brochure *Research in Psychology at Northeastern* for more extensive descriptions of ongoing research.

Dr. Arees - analysis of elementary responses of insects and other small organisms in relationship to structural aspects of their nervous systems. Using video recordings, the frequency and pattern of specific behaviors are analyzed and compared across different species.

Dr. Armington - the relationship of psychophysics to the electrophysiology of vision. Visual-evoked potentials, electroretinograms, and eye movements are recorded in studies of pattern vision, resolution, light adaptation, and color vision.

Drs. Bass And Gould - applied behavior analysis and mental retardation. Stimulus control techniques are applied to conceptual learning tasks and to the solution of behavior-management problems.

Dr. Block - biological bases of animal social behavior and communication. One ongoing experiment seeks to identify olfactory cues, and genetic and motivational factors influencing parent-infant and peer interactions of gerbils and voles.

Dr. Cohen - analysis of reinforcer-induced, motivated behaviors that have been described as addictive, interim, adjunctive, or schedule-induced. Current research with humans explores the possibility that such behaviors reflect either of two types of reinforcer-induced motivational states.

Dr. Hall - social psychology, individual differences, interpersonal communication. Two areas of current research are sex differences in nonverbal behavior and physician-patient relationships, especially the impact of physician behavior on patients' satisfaction and health.

Dr. Harkins - analysis of the social impact that the presence of others has on an individual. He is currently examining the effects of social context on persuasion.

Dr. Kamin - interaction of social and biological influences on behavior, and genetic and environmental factors. Psychometric measures and cognition.

Dr. Lane - the structure, history, and use of American Sign Language to shed light on universal properties of language. One set of experiments examines how articulatory and perceptual constraints influence manual language. Another examines the relations between speech and hearing and the speech of the deaf.

Dr. Mackay - serial learning and memory and the prerequisites of conceptual learning in the retarded. In one set of studies, for example, he uses a sequence-reproduction procedure that is analogous to the digit span test to assess effects of temporal and other variables on remembering in the retarded.

Dr. Mahut - brain mechanisms that mediate memory with special emphasis on diencephalic and temporal lobe structures. Parallel investigations focus on immediate and long-term effects of ablations of equivalent structures in infant monkeys.

Dr. Miller - research on the production and comprehension of spoken language. Specific focus is on the acoustic-phonetic basis of language and the processes involved in phonetic perception and word recognition.

Dr. Norem - research on cognitive strategies used to cope with and adjust to challenging situations that present a threat to self-esteem. This research emphasizes flexibility of strategy use.

Dr. Reeves - human visual perception and visual information processing. Current research concerns effects of attention and imagery on visual perception, color vision, adaptation, visual masking and eye movements.

Dr. Scharf - research in the Auditory Perception Laboratory is concerned with loudness, adaptation, masking, discrimination, and speech perception in normal and hearing-impaired persons. Experiments on

auditory selective attention - the ability to listen to some sounds and ignore others - is also under study.

Dr. Skavenski - neural mechanisms that use visual, vestibular and eye movement information for the control of eye movement and visual space perception. Current studies aim to describe eye movements evoked by parietal cortex stimulation, natural patterns of compensatory eye movement in freely moving monkeys and fixation changes resulting from retinal lesions.

Dr. Soja - research on the relationship between cognition and language. The focus is on the factors that enable children to acquire a representation of their language given the indeterminacy of the evidence provided by the environment.

Dr. Stellar - neurobiology of reward and motivation processes in animals. Current studies involve the functional neurochemistry and neuroanatomy of rewarding electrical stimulation of specific brain sites.

Dr. Stoddard - experimental analysis of behavior occurring in an automated teaching environment for communicating with severely retarded and autistic individuals and for remediating their behavioral deficiencies. Other research involves analysis of relational discriminations in elementary forms of logical thinking, a step in explaining the emergence of novel behavior without direct conditioning.

Dr. Zamansky - studies of hypnosis and related phenomena. Experiments in progress deal with cognitive and motivational characteristics of hypnotizable and nonhypnotizable subjects and with the structure of suggestibility.

PhD Program

The Department of Psychology offers a full-time program of graduate studies and research in experimental psychology leading to the PhD degree. Applicants are considered only for the doctoral program - the MA is granted in the course of progress toward the PhD. Since the PhD degree is awarded in experimental psychology, accomplishment in research forms an essen-

tial and integral part of the program. Students may expect to collaborate with faculty in conducting research in one or more of the following broad areas: learning, motivation, and behavior analysis; sensation and perception; neuropsychology and psychobiology; language and cognition; and experimental personality and social psychology.

Desirable experience includes laboratory courses in psychology and allied natural sciences, as well as courses in mathematics. Applications should be filed in the department by February 15, complete with official transcripts, three letters of recommendation, and a personal essay. Scores on the Graduate Record Examination should be sent to the Graduate School of Arts and Sciences office.

Research assistantships and teaching assistantships offer students the opportunity to receive a tuition scholarship. In addition, those positions also carry a stipend in return for work performed in the department. The Psychology Department endeavors to support, when possible, all graduate students requesting financial aid.

The first year of the program is uniform for all students. It includes four proseminars in advanced experimental psychology (language and cognition, neuropsychology, learning and motivation, and sensation and perception) and two courses in quantitative methods. In addition, all students are expected to choose a research advisor and take an active part in one of the current research projects. Detailed descriptions of the current research projects are contained in the brochure, *Research in Psychology at Northeastern*, available on request.

At the end of the second academic year, each student's readiness for the doctoral program is determined on the basis of performance in the four proseminars and written examinations in the quantitative methods courses. Equal emphasis is placed on the quality of research.

After the first year, the structure of the doctoral program is flexible and assumes that the process of learning and scientific discovery must be individualized; however, the minimum requirements of the Graduate School of Arts and Sciences for the master's degree and the doctor of philosophy degree as established on pages 28 and 29 apply. A wide variety of advanced seminars and courses are offered. Colloquia and in-house seminars bring students and faculty together to discuss on

going research, often with visiting scholars from other institutions. Most important, students pursue their research projects under the guidance of their advisors. The advisors and projects available to students vary from year to year. Potential applicants are encouraged to visit the department in order to discuss their interests with the faculty and to observe the program and facilities firsthand.

MA in Applied Behavior Analysis

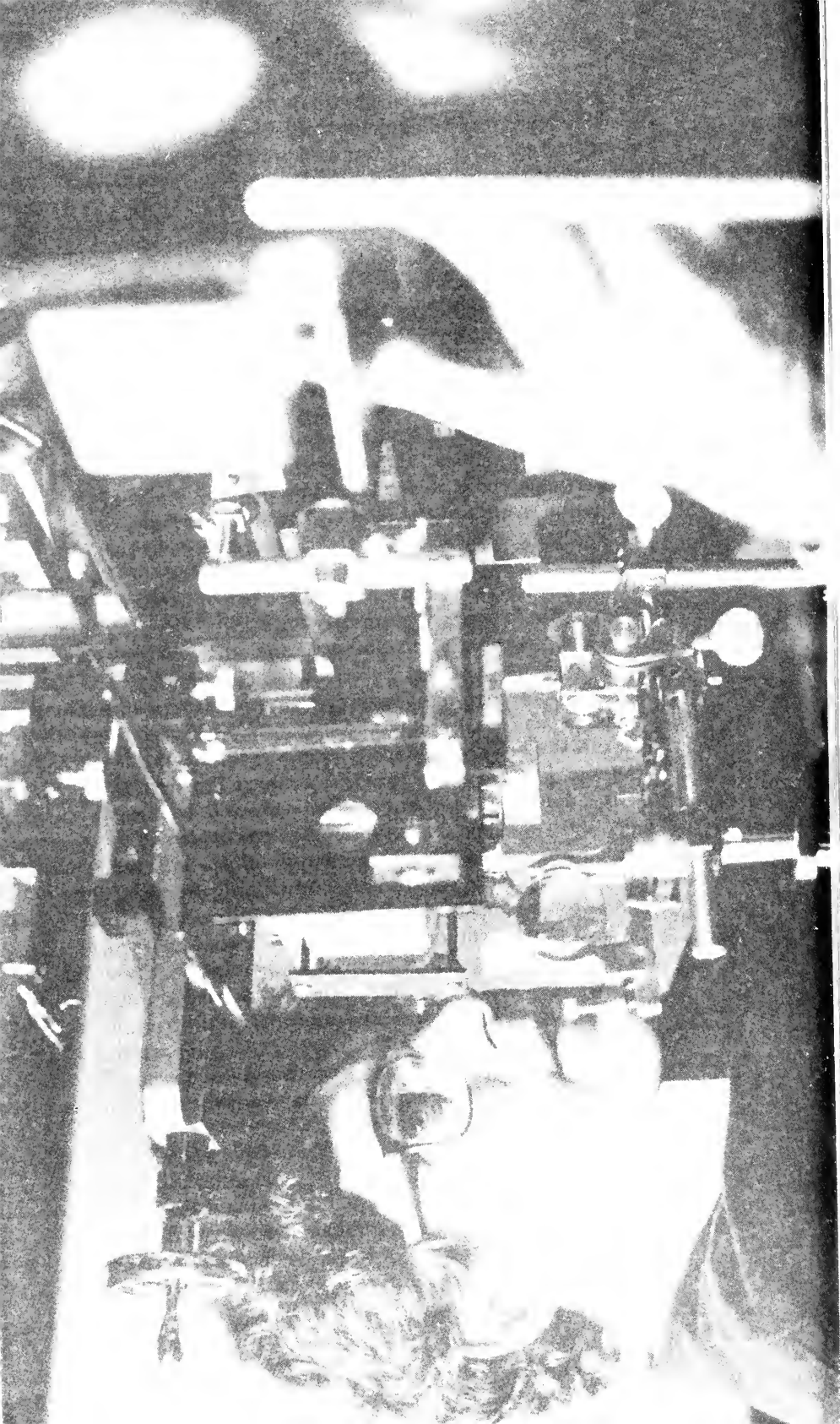
The Department of Psychology also offers a full-time graduate program leading to a terminal MA in applied behavior analysis. The program is jointly sponsored by Northeastern University and by the University-affiliated facility of the Eunice Kennedy Shriver Center for Research in Mental Retardation located at the Walter E. Fernald State School for the retarded.

The two-year program provides the opportunity for students to prepare primarily for service-oriented clinical employment at professional and supervisory levels, in positions that relate to remedial treatment and programming for the retarded. Experience in clinical settings and in applied and laboratory research, along with the broad academic curriculum, also provides students with the opportunity to prepare for further graduate studies in human behavior and learning.

Desirable background includes academic and laboratory courses on human and animal learning, preferably with an operant-conditioning perspective, and some experience with retarded individuals. Applications should be filed by March 1, complete with transcripts, three letters of recommendation, a personal essay, and scores on the Graduate Record Examination.

Support for MA students can include full tuition remission in return for performing teaching assistant functions for the department. Also, field placements, when available, allow paid employment for a maximum of twenty hours per week.

The program is conducted primarily at the Shriver Center and associated facilities. The minimum requirements of the Graduate School of Arts and Sciences for the master's degree as established on page 28 apply. The curriculum stresses the analysis of stimulus control and programmed teaching as solutions to the



problems in learning and behavior management encountered by the retarded. In addition, courses encompass the broader interdisciplinary aspects of mental retardation, covering such topics as its biological bases, neurological and sensory impairments, multidisciplinary evaluation and treatment, and administration of services. Experimental design and research seminars help prepare students to conduct a number of applied projects and their master's thesis research.

Supervised clinical experience is provided with different retarded populations and age groups, including those with motor and sensory handicaps, in a variety of settings. Most students are placed in positions where they receive supervisory and administrative training. Additional experiences include interdisciplinary team evaluations using behavioral and traditional assessment methods; staff training in behavior management and training techniques; community experience via outpatient and home-treatment services, consultants to schools and clinics, and parent training; and laboratory research participation.

Most of the faculty have joint appointments in the Psychology Department of Northeastern University and in the Behavioral Sciences Department of the Shriver Center. The faculty and advisors are drawn primarily from the departmental areas of learning and personality (Gould, Mackay, Stoddard, and Zamansky) and from the staff of the Shriver Center. The MA students maintain an active involvement with the University and the parent Psychology Department through their teaching assistant functions, a number of required and elective courses, colloquia, in-house seminars, and informal exchanges with faculty and students.

Potential applicants may write for further information to the department; they are also encouraged to visit the Shriver Center and the department to discuss the program and their interests with the faculty and to see the facilities firsthand.

Course Listings

The following is a listing of some of the departmental course offerings. Please refer to the *Graduate Schools Course Descriptions* for course descriptions and relevant prerequisites.

PhD Courses:

Course No.	Course Name	Cr
PSY 3013	Proseminar	3
PSY 3015	Proseminar	3
PSY 3016	Proseminar	3
PSY 3018	Proseminar	3
PSY 3111	Quantitative Methods I	3
PSY 3126	Child Language Development	3
PSY 3151	Brain and Behavior	3
PSY 3155	Sensory Psychophysiology	3
PSY 3159	Neurochemistry and Behavior	3
PSY 3161	Cognition and Psycholinguistics	3
PSY 3166	Psycholinguistics	3
PSY 3188	Vision	3
PSY 3211	Quantitative Methods II	3
PSY 3264	Language Acquisition	3
PSY 3289	Perception	3
PSY 3291	Research Laboratory	3
PSY 3311	Quantitative Methods III	3
PSY 3355	Physiological and Comparative Psychology	3
PSY 3371	Social Psychology	3
PSY 3419	Special Topics in Psychology	3
PSY 3449	Issues in Experimental Psychology	3
PSY 3477	Personality Theory and Research	3
PSY 3891	Thesis	6
PSY 3894	Dissertation	0
PSY 3798	Master's Thesis Continuation	0
PSY 3799	Doctoral Dissertation Continuation	0

MABA Courses:

Course No.	Course Name	Cr
PSY 3121	Experimental Design in Applied Research	3
PSY 3122	Applied Programming Seminar I	3
PSY 3123	Programmed Learning	3
PSY 3129	Mental Retardation Seminar	3
PSY 3132	Behavior Intervention I	3
PSY 3133	Advanced Learning Seminar I	3
PSY 3222	Applied Programming Seminar II	3
PSY 3225	Biological Basis of Mental Retardation	3
PSY 3232	Behavior Intervention II	3
PSY 3233	Advanced Learning Seminar II	3
PSY 3321	Systematic Inquiry in Applied Research I	3
PSY 3322	Applied Programming Seminar III	3
PSY 3324	Behavior Change in Institutions	3
PSY 3333	Advanced Learning Seminar III	3
PSY 3421	Systematic Inquiry in Applied Research II	3
PSY 3422	Applied Programming Seminar IV	3
PSY 3522	Applied Programming Seminar V	3
PSY 3549	Practicum	3
PSY 3649	Community Treatment	3
PSY 3891	Thesis	6
PSY 3798	Master's Thesis Continuation	0

Sociology and Anthropology

The Department of Sociology and Anthropology offers a flexible program, combining sociology and anthropology and providing students with an opportunity to acquire broad competence in these fields as well as in related specialized areas. Given the diverse needs of its undergraduate teaching program, the department accommodates a faculty with a wide range of substantive interests covering more than twenty-five of the areas of concentration listed in the American Sociological Association's *Guide to Graduate Departments of Sociology*. The department's offerings in anthropology are considerably more limited, concentrated mostly in social anthropology. The department has particular strengths in the following broadly defined areas:

- Cultural processes, social psychology, and social theory
- Political sociology, economic development, and social change
- Deviance, law, and social control
- Gender studies, family
- Work, occupations, professions, and organizations
- Race, ethnicity, and community studies
- Technology, population, resources, and environment

The department has no predominant paradigmatic orientation. There are on the faculty individuals who do fieldwork, as well as those who do large-scale quantitative surveys, social psychological experiments, content analysis, and comparative historical analysis. Likewise, many theoretical perspectives are represented, including critical theory, symbolic interaction, role theory, network theory, structural functionalism, structural Marxism, and world systems theory.

Professors

Morris Freilich, PhD, *Columbia University*

Debra R. Kaufman, PhD, *Cornell University*

Elliot A. Krause, PhD, *Boston University*

Jack Levin, PhD, *Boston University*
Earl Rubington, PhD, *Yale University*

Associate Professors

Arnold Arluke, PhD, *New York University*
Richard Bourne, PhD, *Harvard University*, JD, *Boston University*
Winifred Breines, PhD, *Brandeis University*
Christine W. Gailey, PhD, *New School for Social Research*
M. Patricia Golden, PhD, *Cornell University*, Chair
Wilfred E. Holton, PhD, *Boston University*
Alan M. Klein, PhD, *State University of New York, Buffalo*
Thomas H. Koenig, PhD, *University of California, Santa Barbara*
Ronald J. McAllister, PhD, *Duke University*
Carol A. Owen, PhD, *Cornell University*
Judith Perrolle, PhD, *Brown University*
Thomas M. Shapiro, PhD, *Washington University*,
Associate Chair

Assistant Professors

Michael Blim, PhD, *Temple University*
Luis Falcon, PhD, *Cornell University*
Herman S. Gray, PhD, *University of California, Santa Cruz*
T. Anthony Jones, PhD, *Princeton University*
Maureen Kelleher, PhD, *University of Missouri, Columbia*
Lynn Stephen, PhD, *Brandeis University*

Instructor

Daniel Faber, PhD, *University of California, Santa Barbara*

Research

Teaching responsibilities for a diverse undergraduate student clientele are reflected in and complemented a remarkable level of scholarly productivity and political involvement in a wide range of areas. In the past year faculty members have given more than fifty papers at professional meetings and have produced more than thirty articles and chapters in books, on topics ranging from aging and athleticism to women's studies and work. Recently published books include titles on community and organization in the new left (Breines), gender relations and colonialism (Gailey), state formation (Gailey), jazz and independent record production

(Gray), women and achievement (Kaufman), drugs and society (Kelleher and Shapiro), mass murder (Levin), population control politics (Shapiro), and computers and social change (Perrolle). Several other manuscripts are in press - on the new industrialism and communities in Italy (Blim), family violence (Bourne), the relevance of culture (Freilich), gender sexuality and the state (Gailey), community-controlled adolescents (Kelleher), and class, politics, and popular religion in Latin America (Stephen). Still other books are under contract and in preparation on topics including the politics of specialization in the field of rehabilitation (Arluke), gender in the social science of the 1950s (Breines), poverty and affluence (Golden and Holton), class struggle in the legal profession (Koenig), the death of the professions (Krause), and deviance (Rubington).

Faculty are also involved in research and writing on ageism (Arluke and Levin), the relationship between labor market processes and socioeconomic inequality among ethnic and racial minorities (Falcon), police discretion (Freilich), the patron system in academia (Golden), mass media and popular culture (Gray), gentrification (Holton), the professions in Eastern Europe and the Soviet Union (Jones), social problems and current changes taking place within the Soviet Union (Jones), sports and cultural resistance in the Caribbean (Klein), women returning to orthodox Judaism (Kaufman), political action committees (Koenig), theology lessons for sociology (McAllister), women in the Japanese labor market (Owen), women in science and mathematics in the United States and Japan (Owen and Golden), reproductive hazards in the workplace (Perrolle and Koenig), and alcoholism (Rubington).

Programs of Study The Department of Sociology and Anthropology offers several degree programs: the master of arts in social anthropology, the master of arts in sociology, and the doctor of philosophy in sociology. The master of arts degree programs are terminal programs. Students must earn their master's degree and qualify (according to department regulations - see page 156) before they are formally admitted into the doctoral program. Admission into the master's program does not guarantee admission into the doctoral program. The department also participates in the interdisciplinary doctoral program in law, policy, and society (see page 99).

Admission

The general procedures and requirements for admission to the Graduate School of Arts and Sciences are set forth on page 21. For admission to the Department of Sociology and Anthropology, all applicants must submit to the department an application form, one- or two-page personal statement, complete official transcripts for all undergraduate and graduate studies undertaken and three letters of recommendation (at least two of which must be academic references). Aptitude test scores (verbal, quantitative, and analytical) on the Graduate Record Examination (GRE) are also required. (In special cases, Miller Analogies Test scores may be accepted in lieu of GRE scores. Please consult the chairperson of the Committee on Graduate Studies.) Test scores should be submitted to the office of the Graduate School of Arts and Sciences. In order to advance to degree candidacy, applicants for the PhD program (see under PhD Degree, Admission) must also submit with their application written materials that demonstrate their capacity for scholarship at the doctoral level. (Copies of several course or term papers or a copy of a master's thesis or paper would be appropriate.) International students should also check page 22 of this catalog.

Applications for admission are considered on a continuing basis for entry in any term specified by the applicant, provided the application is received at least six months prior to the beginning of the term in which the student wishes to matriculate. Students should be aware, however, that the sequencing of required courses is predicated on fall entry.

Each application is reviewed on its own merits. All questions concerning the adequacy of the applicant's undergraduate or graduate background in sociology and anthropology are considered individually. In some cases, students may be asked to make up certain deficiencies before proceeding to the basic MA or PhD requirements. Exceptions are made with respect to procedural or substantive requirements on an individual basis if the circumstances seem sufficiently compelling.

In order to ascertain whether their interests coincide with those of the faculty, prospective candidates are urged to learn something about the scholarly interests and writings of the department's faculty and to talk with graduate students currently in residence, in addition to examining the catalog and course offerings.

There are several types of financial assistance available for graduate students in the department and in the University (see page 168). The three types of assistance described below are awarded by the department. Students must apply for these awards as part of the regular application process. No separate application is required. While there can be no guarantee of financial aid, students should be aware that in recent years, the department has been able to provide either full or partial funding for most students with strong records.

Teaching Assistantships

Most of the department's teaching assistantships are awarded for thirty-nine weeks, although, dependent on undergraduate student enrollments, additional awards sometimes become available on a thirteen-week appointment basis. Teaching assistants are expected to work fifteen to twenty hours per week assisting faculty in teaching undergraduates (conducting discussion sections, grading, etc.). Assistantships provide a tuition scholarship and an additional stipend. They are generally given to continuing students, going to new students only if they have had sufficient experience in teaching undergraduates or if all other promising continuing students have been supported. During the summer quarter, only a limited number of teaching assistantships are available.

Research Assistantships

When departmental funds permit or when funds from outside sources become available, research assistantships may be awarded. Such awards are limited in number, usually to one or two per year. When available, they provide students the opportunity to receive a tuition scholarship. In return for an additional stipend earned with the award, students are expected to work fifteen to twenty hours per week assisting faculty in research activities. In general, research assistantships, too, are more likely to go to continuing students.

Tuition Assistantships

These awards grant tuition remission only, in return for which a student will be called upon for service (e.g., grading, proctoring, bibliographical work, or other small research tasks) of up to eight hours per week. New students are more likely to be offered tuition assistantships. Students should note that the tuition

received via this type of assistantship is classified as taxable income by the Internal Revenue Service.

Although the department accepts applications for admission on a continuing basis, the application deadline for financial assistance in the following academic year is May 15. Applications received before March 15 are given priority. Decisions on financial assistance are made in the spring quarter, separate from decisions on admission. Thus, a student might hear about the admissions decision some time before hearing about the assistance decision.

As a general departmental policy, students in the MA program are limited to four quarters of full-time funding. Those students who enter the PhD program with an MA or its equivalent are limited to six quarters of full-time funding by the department. (This limitation does not affect or apply to funding from other sources in the University, such as the Office of Financial Aid.) Those who enter the doctoral program directly from undergraduate school may be funded by the department for up to ten quarters. (Again, this limitation does not affect or apply to funding from other sources in the University or elsewhere.) Reappointment is contingent upon satisfactory performance in academic work and signed duties.

Students should note the acceptance conditions and terms of appointment outlined on page 170. Students who hold assistantships are expected to devote full time to their studies and the duties of the award.

N.B.: Some of the requirements listed here for both the MA and PhD have undoubtedly been modified. Please check with the department and/or the Graduate School for the most recent information. This applies also to course offerings.

The Master's Degree

The department offers graduate programs leading to a master of arts degree in sociology or in social anthropology. Forty quarter hours of academic work, completed with a B (3.000) average or better, is required for the degree. The program usually consists of five or six required and six or seven elective courses. With the approval of the department and the Graduate School,

certain advanced undergraduate courses offered by the department may be taken for graduate credit. In these courses, students must maintain better than a B (3.000) average.

Students are encouraged to fashion a program of studies best suited to their needs and abilities. To this end, all entering students should consult with the faculty advisor assigned to them. The faculty advisor not only helps the student to articulate interests and plan courses but also suggests other faculty members whose areas of interest and competence intersect with those of the student and with whom the student might consult on a regular basis. A permanent relationship with the first advisor continues only if there exists a mutual interest in such a partnership. Students may terminate or initiate an advisor/advisee relationship at any time, simply by consulting with and informing the parties concerned. The graduate secretary should also be informed of any changes.

For the master of arts in sociology, students are generally required to take two one-quarter courses in theory (usually SOC 3100 and SOC 3101) and two or three courses in methodology (usually SOC 3116 and either SOC 3117 or SOC 3120/SOC 3121, or SOA 3121/SOA 3122). The statistics requirement may be satisfied by achieving at least a B in SOC 3115 or its equivalent. All students are strongly advised to take some coursework in social anthropology. Each of the required courses carries four quarter hours of credit. Enrollment in the master's level proseminar (SOC 3125, SOC 3126, SOC 3127) is also suggested.

For the master of arts in social anthropology, students are generally required to take two one-quarter courses in theory (usually SOC 3100 and SOA 3100) and in methodology (usually SOA 3121/SOA 3122 or SOC 3120/SOC 3121), in addition to a basic course in anthropology (usually SOA 3101, SOA 3102, or SOA 3156). Other requirements are individually determined. All students are strongly advised to take some coursework in sociology. Each of the required courses carries four quarter hours of credit. Enrollment in the master's level proseminar (SOC 3125, SOC 3126, SOC 3127) is also suggested.

Students who can demonstrate proficiency in any of the requirements need not take those particular courses and should petition the Committee on Graduate Studies for an opportunity to demonstrate proficiency.

With the approval of at least one faculty supervisor a student may elect to prepare a master's paper or to revise a paper prepared for a previous course as a master's paper. The paper earns six quarter hours of credit. Students should register *once* for SOA 3810, Master's Paper in Social Anthropology, or SOC 3810, Master's Paper in Sociology, and then for SOA 3798 or SOC 3798, Master's Thesis Continuation, during each subsequent quarter that they are working on their M. A. paper. The continuation registrations are fee-bearing (see page 30) but not credit-bearing. It is expected that the full-time student will complete the master's paper no later than the end of the second year of study.

A student choosing this option must have substantially completed the master's paper, as certified by the faculty supervisor, on or before April 1 of the year in which the student expects to be awarded the degree. Final approval by the supervisor must be secured at least two weeks before the commencement at which the degree is to be awarded. Those who miss the April 1 deadline normally have to wait until the next academic year to receive the degree. A September degree can be arranged only if the faculty supervisor (as well as any other members, should there be a committee) is available and agrees to read the student's paper during the summer term.

The Doctor of Philosophy Degree

The department offers the PhD in sociology. Only a limited number of students are enrolled in the PhD program, so as to provide highly personalized study and research training with individual supervision.

Admission

Applicants to the doctoral program should apply for admission in the year in which they expect to complete the requirements for the master's degree. Students who possess master's degrees earned in areas other than sociology are considered for admission on an individual basis. Please note that in addition to the usual materials required for admission to the department, applicants for the doctoral program are required to submit with their application written materials that demonstrate their capacity for scholarship at the doctoral level. (Copies of several course or term papers or a copy of a master's thesis or paper would be ap-

propriate.) See the Admission Section on page 154 as well as the sections on Qualifying Examination and Degree Candidacy below.

Residence Requirement

The University's residence requirement can be satisfied by one year of full-time graduate work, or its equivalent, beyond the master of arts degree. If the student's MA degree is not in sociology, a longer period of residence is normally required. Most students should expect to spend approximately two years, or the equivalent, in full-time graduate study beyond the requirements of the master's degree.

Qualifying Examination

Students must submit written materials in the social sciences for evaluation in accordance with rules established by the Committee on Graduate Studies (COGS). These materials (copies of several course/term papers or a copy of a master's thesis/paper would be appropriate) must demonstrate the student's capacity for scholarship at the doctoral level.

All students are expected to present and discuss their work in an oral examination under guidelines established by COGS. Strengths and weaknesses evident in the written materials are discussed with the student and suggestions made for remedying any weaknesses. Students should recognize that, while diagnosis is a goal of the qualifying examination, a critical evaluation is also made. A pass/conditional or pass/no pass decision is rendered by COGS within two months, at which time a final evaluation of pass/no pass is made and communicated to the student in writing. In light of the examination performance, the student's future course is charted with the objective of helping the department and the student to determine the best course of action. Excessive weakness would lead to a recommendation that the student consider pursuing alternatives elsewhere.

Students applying for doctoral studies from outside the department should submit their qualifying documents with their application. An oral examination is then scheduled during the first quarter of doctoral residence. Applicants without appropriate written materials in the social sciences should consult the chair of COGS. Alternative ways of completing this requirement will be considered only in exceptional circumstances and only for students with masters degrees from other universities.

The qualifying materials must be submitted and accepted before the end of the first year of doctoral residence. (Please note that for continuing students, funding beyond the MA level may be contingent on completion of this requirement before the end of the first *quarter* of doctoral residence.) Students may make only two attempts to complete this requirement. This means that students have two opportunities (not counting resubmissions of conditional passes) to submit and defend acceptable qualifying documents. Should students not take and pass the examination (or should conditional passes not be resubmitted) within the time specified, or should the second attempt not prove successful, the student will be asked to leave the program.

Degree Candidacy Degree candidacy is established in accordance with the general regulations of the Graduate School; that is, the student must have completed forty quarter hours of acceptable graduate work (the minimum course requirement of forty quarter hours constitutes the same work normally required for a master's degree) and must have passed the qualifying examination. To enter into degree candidacy in sociology, the student must also have a master of arts degree or its equivalent, three current letters of recommendation (at least two of which must be academic references) on file in the department, and an advisory committee consisting of three faculty members from the department.

Course Requirements As prerequisites, all doctoral candidates are expected to have completed the core requirements for the master's degree in sociology (SOC 3100, SOC 3101, SOC 3115, SOC 3116, and SOC 3117 - see page 157 for their equivalent). Students entering from another university or from another major may be required to take certain basic courses (e.g., the core requirements) before proceeding with the doctoral program. Credits earned for master's-level core requirements cannot be counted toward the doctorate.

Generally, thirty-three quarter hours of graduate work beyond the master's degree is required. Depending on background, experience, and performance, a greater or lesser number of formal courses may be required. Decisions on special cases are made by COGS acting in conjunction with the student, the student's advisor(s), and the chairperson of the department.

All doctoral students are required to include in the program of study the Doctoral Proseminar (SOC 3620).

SOC 3621, and SOC 3622). Also required (with a minimum grade of B) are Recent Developments in Sociological Theory (SOC 3301) and Current Issues in Social Research (SOC 3321). All doctoral candidates are strongly urged to take additional research courses, especially Multiple Regression (SOC 3320) and, if they have not taken it previously, the Qualitative Methods sequence (SOC 3120/SOC 3121 or SOA 3121/SOA 3122).

Students who can demonstrate proficiency in any of the requirements need not take those particular courses and should petition COGS for an opportunity to demonstrate proficiency.

Students should register for SOC 3820, Doctoral Dissertation for three terms and then for SOC 3799, Doctoral Dissertation Continuation, during each subsequent quarter that they are working on their dissertation. These registrations are fee-bearing (see page 29) but not credit-bearing.

Language Requirement

The language requirement may be satisfied by a reading knowledge of one language other than English in which there is substantial sociological literature or by a language needed for research in the student's area of specialization. Students must submit their choice of language to COGS for approval. The committee arranges for a means of demonstrating language competency. A research language may be a computer language or the native language of a foreign student, if these languages can be shown to be relevant to the student's dissertation research interests. The language requirement should be satisfied before students attempt to fulfill the comprehensive requirement (see below).

Teaching Requirement

All doctoral candidates are required to teach. Students should register for SOC 3615, Tutorial in Teaching (for which a maximum of three quarter hours of credit may be counted toward the degree) during a term in which they are responsible for teaching a course. The COGS approves the tutorial credit, taking into consideration materials and evaluations supplied by the student.

Research Experience

All doctoral candidates are encouraged to acquire practical experience in social science research. This requirement may be met through working as a research assistant, through directed study, or through some other arrangement acceptable to the candidate and COGS.

Comprehensive Requirement

During the period of doctoral degree candidacy, each student must complete the comprehensive requirement the purpose of which is to ensure that the student has mastery in two substantive areas of sociology. To demonstrate mastery, the student must prepare two area portfolios, each area portfolio to be assembled under the supervision of a review committee consisting of three faculty members designated by the student and approved by COGS. The area portfolio, which would consist of any combination of written work (papers, examinations, or other assignments) deemed to be acceptable by the review committee, must include an annotated bibliography and a discussion of general issues in the area. A formal written examination might reasonably constitute one element of the portfolio, but such an examination would not be included unless the student petitioned for its inclusion and the review committee concurred. All students are expected to present their work in an oral defense of one hour for each portfolio, or two hours if the portfolios are presented jointly.

The portfolio is initially evaluated by the review committee on a pass/conditional pass/no pass basis. Portfolios given a conditional pass must be rewritten or redone within two months to address the review committee's concerns and must be resubmitted for a final evaluation of pass/no pass.

Students may make only two attempts to complete particular portfolio. In other words, students have two opportunities (not counting resubmissions) to prepare an acceptable portfolio in each of their substantive areas. Should either of the portfolios not be accepted after a second submission (except under extraordinary circumstances), the student will be asked to leave the program. Likewise, should both of the portfolios receive a no pass evaluation on first submission, the student's candidacy will be terminated.

The comprehensive requirement must be completed at least nine months before the commencement at which the PhD is to be awarded. Students who enter the department between September 1983 and September 1984 are required to adhere to the guidelines outlined in the 1982-84 or 1984-85 catalog. From September 1985, all students must adhere to the guidelines in the 1984-85, or succeeding, catalog.

Dissertation Proposal Hearing

The student must submit a prospectus describing the topic of the doctoral dissertation, the methods of re-

search, and the theoretical relevance of the problem. This prospectus is to be discussed with, and approved by, the dissertation committee consisting of the student's major advisor, two readers within the department, and at least one reader from outside the department. A formal hearing is scheduled, at which the student assembles the committee and other interested faculty and students to discuss the proposed work critically. If refinement of the proposal is considered necessary, the student is required to modify the document to satisfy the committee. The revised prospectus is then filed with the department. There is no alternative to the proposal hearing.

Deadlines for Considering Doctoral Dissertation

The chairperson of the dissertation committee should be fully satisfied that a dissertation is substantially complete on or before April 1 of the year in which the candidate expects to defend the dissertation. A defense that might enable the student to receive a September degree can be arranged only if all members of the student's committee are available and agree to arrange a defense during the summer term.

Final Oral Examination

The dissertation may be defended only after completion of all other requirements for the doctoral degree. This oral defense is held approximately four weeks after the dissertation has been accepted by the dissertation committee, and at least two weeks before the commencement at which the degree is to be awarded. Please note that candidates for the doctoral degree must be registered for Doctoral Dissertation (SOC 3820 or SOC 3799) during the term in which the dissertation is defended at the final oral examination.

Course Listings

The following is a listing of all departmental course offerings. Please refer to the *Graduate Course Descriptions* for course descriptions and relevant prerequisites.

Course No.	Course Name	Credit
SOA 3100	Culture Theory	4 QH
SOA 3102	Class and State Formation	4 QH
SOA 3120	Camera on Culture: Visual Anthropology	3 QH
SOA 3121	Fieldwork 1	4 QH
SOA 3122	Fieldwork 2	4 QH
SOA 3145	Peasants	3 QH
SOA 3155	Individual and Culture	3 QH

SOA 3156	Gender, Kinship and Social Change	4 Q
SOA 3220	Culture and Mental Illness	3 Q
SOA 3310	Development and Decolonization	3 Q
SOA 3345	Urban Ethnography	3 Q
SOA 3355	Anthropology of Law and Conflict	3 Q
SOA 3360	Economic Anthropology	3 Q
SOA 3410	Contemporary Issues in Social Anthropology	3 Q
SOA 3411	Contemporary Issues in Social Anthropology	3 Q
SOA 3412	Contemporary Issues in Social Anthropology	3 Q
SOA 3413	Contemporary Issues in Social Anthropology	3 Q
SOA 3425	Tribal Societies and Culture	3 Q
SOA 3440	Latin American Society and Development	3 Q
SOA 3441	Ethnographic Area Courses	3 Q
SOA 3442	Ethnographic Area Courses	3 Q
SOA 3443	Ethnographic Area Courses	3 Q
SOA 3444	Ethnographic Area Courses	3 Q
SOA 3445	Ethnographic Area Courses	3 Q
SOA 3600	Seminar	3 Q
SOA 3601	Seminar	3 Q
SOA 3602	Seminar	3 Q
SOA 3798	Master's Thesis Continuation	0 Q
SOA 3800	Directed Study	3 Q
SOA 3801	Directed Study	3 Q
SOA 3802	Directed Study	3 Q
SOA 3803	Directed Study in Anthropological Theory	4 Q
SOA 3810	Master's Paper in Social Anthropology	6 Q
SOC 3100	Foundations of Social Theory I	4 Q
SOC 3101	Foundations of Social Theory II	4 Q
SOC 3103	American Society	3 Q
SOC 3113	Introduction to Research Methods	2 Q
SOC 3114	Introduction to Quantitative Research Methods	2 Q
SOC 3115	Introduction to Statistical Analysis in Sociology	4 Q
SOC 3116	Introduction to Research Methods	4 Q
SOC 3117	Quantitative Research Methods	4 Q
SOC 3120	Seminar in Qualitative Analysis I	4 Q
SOC 3121	Seminar in Qualitative Analysis II	4 Q
SOC 3125	Proseminar I	1 Q
SOC 3126	Proseminar II	1 Q
SOC 3127	Proseminar III	1 Q
SOC 3135	Issues in Social Psychology	3 Q
SOC 3140	Sociology of Prejudice and Discrimination	3 Q
SOC 3147	Urban Sociology	3 Q
SOC 3148	Boston Seminar	3 Q
SOC 3149	Metropolitan and Regional Issues	3 Q
SOC 3155	The Family	3 Q
SOC 3160	Women, Men and Social Change	3 Q
SOC 3165	Sociology of Education	3 Q
SOC 3166	Sociology and Anthropology in the Schools	4 Q
SOC 3170	Intergroup Relations	3 Q
SOC 3171	Race and Ethnic Relations: A World Perspective	3 Q
SOC 3175	Sociology of Work	3 Q
SOC 3176	Sociology of Occupations and Professions	3 Q
SOC 3185	Sociology of Deviant Behavior	3 Q
SOC 3186	Social Control I	3 Q
SOC 3187	Social Control II	3 Q
SOC 3190	Sociology of Delinquency	3 Q
SOC 3200	Sociology of Alcoholism	3 Q
SOC 3205	Sociology of Crime and Justice	3 Q

SOC 3206	Sociology of Law	3 QH
SOC 3215	Sociology of Medicine	3 QH
SOC 3225	Sociology of Aging	3 QH
SOC 3226	Processes of Aging	3 QH
SOC 3240	Formal Organizations	3 QH
SOC 3245	Sociology of Poverty	3 QH
SOC 3275	Sociology of Art	3 QH
SOC 3276	Popular Culture	3 QH
SOC 3278	Mass Communication and Society	3 QH
SOC 3286	Sociology of Science	3 QH
SOC 3300	Contemporary Sociological Theories	3 QH
SOC 3301	Recent Developments in Sociological Theory	3 QH
SOC 3302	Sociology of Knowledge	3 QH
SOC 3303	Economic Sociology	3 QH
SOC 3304	Feminist Theory	3 QH
SOC 3310	Social and Cultural Change	3 QH
SOC 3311	Social and Cultural Change	3 QH
SOC 3320	Multiple Regression in Sociological Analysis	3 QH
SOC 3321	Current Issues in Social Research	3 QH
SOC 3322	Experimental Methods I	3 QH
SOC 3323	Experimental Methods II	3 QH
SOC 3325	Sociology of Policy, Planning, and Evaluation	3 QH
SOC 3335	Seminar in Symbolic Interaction	3 QH
SOC 3336	Seminar in Socialization I	3 QH
SOC 3337	Seminar in Socialization II	3 QH
SOC 3338	Seminar in Socialization III	3 QH
SOC 3345	Community Analysis	3 QH
SOC 3347	Seminar in Urban Sociological Policies	3 QH
SOC 3355	Political Sociology	3 QH
SOC 3357	Comparative Socialism	3 QH
SOC 3360	Social Stratification	3 QH
SOC 3365	Social Movements	3 QH
SOC 3390	Seminar in Social Structure I	3 QH
SOC 3391	Seminar in Social Structure II	3 QH
SOC 3405	Theories of Criminology	3 QH
SOC 3410	Contemporary Issues in Sociology	3 QH
SOC 3411	Contemporary Issues in Sociology	3 QH
SOC 3412	Contemporary Issues in Sociology	3 QH
SOC 3413	Contemporary Issues in Sociology	3 QH
SOC 3430	Latin American Societies	3 QH
SOC 3431	Middle East Area Study	3 QH
SOC 3470	Sociology of Religion	3 QH
SOC 3485	Computers and Society	3 QH
SOC 3600	Seminar	3 QH
SOC 3601	Seminar	3 QH
SOC 3602	Seminar	3 QH
SOC 3603	Rhetoric in Sociology	3 QH
SOC 3615	Tutorial in Teaching	(maximum) 3 QH
SOC 3620	Doctoral Proseminar I	1 QH
SOC 3621	Doctoral Proseminar II	1 QH
SOC 3622	Doctoral Proseminar III	1 QH
SOC 3800	Directed Study in Sociology	3 QH
SOC 3801	Directed Study in Sociology	3 QH
SOC 3802	Directed Study in Sociology	3 QH
SOC 3810	Master's Paper in Sociology	6 QH
SOC 3820	Doctoral Dissertation	0 QH
SOC 3798	Master's Thesis Continuation	0 QH
SOC 3799	Doctoral Dissertation Continuation	0 QH

General Information

Financial Information

Financial Obligations

Tuition and Fees

Tuition rates and all fees are subject to revision by the President and the Board of Trustees at any time and may change annually. Current tuition rates and fees are listed in the brochure *Graduate School Expenses*, which may be obtained from the Bursar's Office or the Graduate School office.

Tuition statements are mailed to students by the Bursar's Office and are payable by cash or check to Northeastern University on or before the date specified.

Refunds

Tuition refunds will be granted only on the basis of the date appearing on the official withdrawal form filed by the student. Non-attendance does not constitute official withdrawal. Questions regarding refunds should be discussed with the Bursar's Office.

Refunds will be granted in accordance with the following schedule:

Office Withdrawal Filed Within:	Percentage of Tuition Refunded
First week of quarter	100
Second week of quarter	75
Third week of quarter	50
Fourth week of quarter	25

Financial Assistance

Northeastern University offers graduate students a variety of means for obtaining financial assistance. In addition to various types of assistantships awarded by the individual graduate schools, the Office of Financial Aid administers several forms of financial aid. A limited number of fellowships are also available to minority students through the African-American Institute, and each year there are part-time residence hall staff positions available.

Office of Financial Aid

The Office of Financial Aid offers several types of assistance to graduate students. All awards are based on financial need. Since the majority of these awards are sponsored by the Federal Government, the amount of aid granted is dependent upon the amount of funds allocated to Northeastern University each year.

In order to meet application deadlines for financial aid, students may have to apply for financial aid before they have been offered admission to the Graduate School. However, only those students who are accepted will be reviewed for financial aid. In addition, the University only awards financial aid to students who are U.S. citizens and permanent residents of the United States. Students who are studying in the United States on student visas are not eligible for financial assistance.

Northeastern University is a participant in the College Scholarship Service which utilizes the Financial Aid Form (FAF). All applicants for financial aid (including loans) must file an FAF in order to be considered. Northeastern University's Graduate School Financial Aid application and transcripts of financial aid history from other schools attended are also required. All application forms are available from the Office of Financial Aid, 254 Richards Hall, Northeastern University, Boston, MA 02115.

Perkins Loans

This program is available to full-time graduate students who show a high level of financial need. Graduate students may borrow up to \$1800 during the course of their entire educational careers. Repayment and interest do not begin until six months after the student ceases to carry at least a half-time academic load. Repayment may be extended over a ten-year period with an interest rate of five percent per annum. No payments are required for up to three years while a borrower is serving in the Armed Forces, Peace Corps or VISTA or is working as a full-time volunteer for a tax-exempt charitable organization.

College Work-Study Program

This program is available to full-time graduate students who show financial need. It is designed to give students an opportunity to earn as much as \$7.75 per hour working in jobs on or off campus in public or private nonprofit organizations. This program is administered solely by the Office of Financial Aid and should not be confused with the University's Cooperative Education Program.

Afford Student Loan (SSL) Program

(formerly the Guaranteed Student Loan)

Under this program, students who demonstrate financial need, in accordance with guidelines established by the U.S. Department of Education, may borrow money for educational expenses from banks or other private lending institutions. Financial need is determined by the Financial Aid Office at Northeastern on the basis of information provided in the Financial Aid Form (FAF). Students must also be enrolled on at least a half-time basis, in a degree granting program, to be eligible for these loans.

The maximum annual borrowing limit is \$7500 and the aggregate limit (including SSL's borrowed at the undergraduate level) is \$54,750. The current interest rate is 8%. However, students with outstanding SSL's borrowed at 7% or 9% will continue to borrow at that same rate. Information on specific terms, conditions, fees and repayment, as well as application forms, may be obtained from lending institutions and state guarantee agencies. You may also contact the Office of Financial Aid at Northeastern.

Please note: Students must receive a financial aid award letter from the Office of Financial Aid before submitting the SSL application form to the Student Loan Office at Northeastern.

Massachusetts Graduate Student Grant

This fund is provided by the Commonwealth of Massachusetts to assist needy residents pursuing master's or doctoral degrees on a full- or half-time basis. The Commonwealth has specified that Law, Pharmacy, and specific medical programs will not be eligible. The grants are also restricted to permanent Massachusetts residents defined as those who have a permanent address in the state and have been living here for other than educational purposes for the two full years prior to beginning the graduate program. The maximum grant is \$4,000, although awards vary depending on available funding and comparative financial need.

N.B.: This information is current as of the date of this publication. All federal programs are subject to change. Please check with the Office of Financial Aid to determine the status of financial aid programs at the time you plan to enroll.

Scholarships

Northeastern University Minority Fellowships

These fellowships are to assist a limited number of students accepted for full-time study in the graduate schools of the University. The awards, which offer a

monetary grant and remission of tuition, are made to students who demonstrate superior academic achievement and are competitive within their graduate school. Applications may be obtained from the Graduate School Office.

Martin Luther King, Jr. Scholarship

A limited number of full-time Martin Luther King, Jr. Scholarships are available. These scholarships pay the recipient's full tuition and fees during the course of satisfactory graduate work. Further information and applications are available at the African-American Institute, Northeastern University, 40 Leon Street, Boston, Massachusetts 02115.

Helen M. Loeb Memorial Scholarship

The Helen M. Loeb Memorial Scholarship was established in 1986 by the Society for Technical Communication, Boston Chapter, and by Dr. Loeb's friends and students. Dr. Loeb founded the technical writing programs at Northeastern and was instrumental in establishing technical communications as a discipline of study, including its own body of research and scholarship. The strong ties she made between industry and the University continue and are strengthened by this jointly sponsored scholarship. Awarded solely for merit, it is given each year to the student in the graduate technical writing programs showing the most potential as a technical communicator.

Assistantships

Northeastern University has available a limited number of assistantships for full-time students who are working toward their master's or doctoral degree. Candidacy for these awards may be established by completing the appropriate application obtained in the Graduate School office. Those students already enrolled should consult their advisors.

Appointments to assistantships are ordinarily announced no later than April 15 for the following academic year or summer. Appointments are for a minimum of three quarters and are not automatically renewed. Students who hold assistantships are expected to devote full time to their studies and the duties of the award. Exceptions to this latter policy must be petitioned through the departments to the Graduate School Office. In addition, students are required to maintain full-time registration status in all

quarters to which an assistantship is held. For the definition of full-time status, see page 22.

Teaching Assistantships

A limited number of teaching assistantships are available to graduate students, offering the opportunity to receive a tuition scholarship. A stipend is also given with the award in return for academic assistance in the department in areas directly related to the teaching function. Holders of such awards are expected to devote half their time to the duties of the award and the balance to coursework.

Graduate Administrative Assistantships

Some departments offer graduate administrative assistantships which provide students the opportunity to receive a tuition scholarship. A stipend is also given with award in return for half their time spent in assisting the department with non-teaching, administrative duties. The assistantships are available on a limited basis.

Research Assistantships

A number of departments offer a limited number of research assistantships, giving students an opportunity to receive a tuition scholarship. A stipend is also given in return for research done in the department. Certain of these grants require half-time work on research in the department, with the remaining time devoted to coursework. Others provide for full-time work on research used for thesis or dissertation.

Northeastern University Tuition Assistantships (NUTA)

A limited number of tuition assistantships are available, offering remission of tuition to full-time students assisting ten hours a week in the administrative work of the department. These awards are normally given to student in the first year of graduate work. Students should note that the value of the tuition received via this type of assistantship has been defined by the Internal Revenue Service as taxable.

Acceptance Conditions

Northeastern University, which is a member of the Council of Graduate Schools of the United States, subscribes to the following resolution of the Council:

Acceptance of an offer of financial aid (such as a graduate scholarship, fellowship, traineeship, or assistantship) for the next academic year by an actual or

prospective graduate student completes an agreement which both student and graduate school expect to honor. In those instances in which the student accepts the offer before April 15 and subsequently desires to withdraw, the student may submit in writing a resignation of the appointment at any time through April 15. However, an acceptance given or left in force after April 15 commits the student not to accept another offer without first obtaining a written release from the institution to which a commitment has been made. Similarly, an offer by an institution after April 15 is conditional on presentation by the student of the written release from any previously accepted offer.

Residence Hall Staff Positions

A limited number of residence staff positions in housing facilities are available each year. Appointments carry a minimum compensation of room and board. Further information may be obtained from the Office University Housing, 104-106 Ell Building.

Outside Grants

Frequently, the Dean's Office receives announcement of available funds for research sponsored by organizations outside the University, such as the National Science Foundation and the National Endowment for the Humanities. For further information contact the Dean's Office, 400 Meserve Hall, 437-3980

The federal aid programs listed above are available to citizens and permanent residents of the United States. All financial aid is available on a limited basis.

Facilities and Resources

In 1910, Northeastern University began new construction on the first piece of land acquired at its present Huntington Avenue site. Since those early days, the central Boston Campus has grown to occupy over fifty acres of land located next to such cultural landmarks as Symphony Hall, the Museum of Fine Arts, the Isabella Stewart Gardner Museum, Horticultural Hall, and the Boston Public Library, among others. The University is within walking distance of Fenway Park, Copley Place, the Back Bay shopping district, and a number of renowned hospitals, including Brigham and Women's and other Harvard teaching hospitals.

In addition to sixteen suburban campuses and branch locations and several off-campus athletic facilities, Northeastern University maintains a variety of affiliations that provide its students access to facilities and specialized equipment at other institutions or from other organizations.

Central Boston Campus

The central Boston Campus is built around a quadrangle, one side of which faces Huntington Avenue, a major artery dividing the campus. The buildings surrounding the quadrangle characterize the urban design of the campus, and the innovative design of new buildings added in recent years has maintained an architectural theme that is both attractive and functional.

The campus itself has been planned to provide easy access to classrooms, laboratories, and administrative offices through a series of connected walkways and a network of underground corridors, providing routes that are especially convenient during periods of inclement weather. As the University continues to expand, parking and recreational areas are integrated into the campus along with new academic facilities.

Suburban Facilities

Northeastern University's five suburban campuses provide administrative and classroom facilities for the University's graduate, adult, and continuing education programs as well as the environment necessary for specific programs of study that could not be accommodated in an urban area.

The Warren Center provides a practical laboratory in outdoor education and conservation and in camping

administration, programming, and counseling. It also offers a summer campsite for various community and University groups and activities and is available as a conference and workshop site.

The Marine Science and Maritime Studies Center is located in Nahant, on Massachusetts Bay, twenty miles northeast of Boston, and serves as a site for national and international as well as University research.

Henderson House is Northeastern University's conference center. Located twelve miles from Boston in suburban Weston, Henderson House hosts a variety of round-the-clock activities, including residential seminars, workshops, short courses, and weekend meetings.

The Suburban Campus of Northeastern University is located in Burlington, near the junction of routes 128 and 3. Graduate courses in engineering, business administration, and education as well as undergraduate courses for part-time students are offered here. The Burlington campus also offers special programs for adults and noncredit continuing education courses.

The Suburban campus is situated close at hand to another Northeastern University facility, the Botanical Research Station in Woburn, which contains a small arboretum and a spacious greenhouse used for propagation and research.

One of the most recent campus acquisitions is the twenty-acre Dedham Campus, just north of Route 128. This recently renovated facility provides space for the College of Business Administration's new High Technology MBA program and offices for the Center for Continuing Education, and houses the University's new outdoor track and field facility.

University Libraries

The University Libraries include seven units. On the Boston campus, there is the main facility Dodge, and three libraries that house graduate-level collections: Chemical and Biomedical Sciences, Mathematics/Psychology, and Physics/Electrical Engineering. There are also three libraries located on the Burlington and Dedham campuses and at the Marine Science and Maritime Studies Center at Nahant.

The total holdings of the University Libraries include the equivalent of more than one million volumes in print and in microform, 5000 periodical titles, 300,000 government documents, and 24,000 items in audiovisual software and computer software formats.

In the main library, the Learning Resources Center provides computer-assisted instruction, microcomputer facilities, and language and music listening laboratories. Also housed in the Center is an extensive set of self-paced media materials, in varied interactive formats, including audiotapes, videotapes, and computer-assisted lessons and exercises.

Librarians provide reference assistance and instruction on strategies for bibliographic research. On-line literature searches are conducted, for a fee, by librarians in Computer Search Services. Individual conferences may also be arranged with a librarian to discuss particular or specialized research needs. A series of publications, prepared by the library staff, are available to acquaint students with library collections and services.

Should needed materials not be in the collections of the University Libraries, staff will assist you in identifying other libraries that own a particular title. Requests to borrow books and other materials or to obtain photocopies of articles from other libraries are handled through Interlibrary Loan.

The University's membership in the Boston Library Consortium generally allows Northeastern University students on-site use of consortium libraries at the following institutions: Boston College, Boston Public Library, Boston University, Brandeis University, MIT, State Library of Massachusetts, Tufts University, the University of Massachusetts (Amherst, Boston, and Worcester campuses), and Wellesley College. Borrowing privileges may also be granted to graduate students who hold a consortium card.

Division of Academic Computing

The Division of Academic Computing facilitates the use of computers by Northeastern students and members of the faculty. Some years ago that meant maintaining one good-sized computer, used primarily by those doing advanced work in engineering, mathematics, or the physical or biological sciences. More recently, computing has found productive use in nearly every field of study pursued at the university. At the same time, computing activities have increasingly migrated to personal computers, altering the nature of the need for computing services. DAC is committed to meeting these new challenges while continuing to support the traditional, computationally intensive uses of computing.

DAC's Personal Computing Initiative supports personal computing with negotiated discounts on hardware and software (available through the Northeastern Computer Store) and with advice, training, and assistance on personal-computer use. The goal is to create an environment as hospitable and supportive as possible to the personal mode of computing, including the ability to connect personal computers to university computing systems. DAC and its Computing Resource Center maintain the *lynx* communication system for the exchange of computer mail and conference discussion. Computer mail can also be exchanged with users at any of several thousand computers at other institutions. Participation in *lynx* is available to any member of the Northeastern community and is free. To sign up for a *lynx* account, bring a valid Northeastern I.D. to 39 Richards Hall during business hours.

The Computing Resource Center also maintains mainframe computing resources (most notably the VAXCluster system) and numerous public-access labs with personal computers and terminals on the Boston, Deane, and Liberty Square campuses. An advanced high-speed network connects the university's computing facilities and links them to other computers at locations around the world. *ACCESS*, the newsletter of the division, appears seven times a year and includes the locations and facilities of the labs and news about other DAC and CRC services and facilities. *The Source: Academic Computing at Northeastern University* describes the computing environments and their use and is for sale at the University Book Store.

Graduate Student Housing

Housing in a University apartment facility is available to full-time graduate students on a first-come, first-served basis. These fully furnished apartment facilities offer units designed for two, three, or four students.

An off-campus housing referral service is available which can provide lists of available apartments and rooms in the Greater Boston area and of students who are seeking roommates.

Department of Career Development and Placement

The Department of Career Development and Placement offers a wide range of counseling and placement services to all seniors, graduate students, and alumni of Northeastern University seeking employment, as well as to students interested in participating in nonpaid part-time internships in private or public nonprofit agencies, for which they may receive academic credit.

Through this department, representatives of hundreds of employers are scheduled to visit the campus each year to interview seniors and graduate students for full-time employment after graduation. A job bank of currently available positions is maintained for alumni who are seeking new opportunities for which they may be qualified. A credential service is provided for students and alumni seeking positions in the field of education and for applicants to graduate and professional schools. Regularly scheduled seminars are conducted for seniors, graduate students, and alumni on career development, job-finding techniques, resume preparation, and effective interviewing. Individual career counseling is available for seniors, graduate students, and alumni of all University programs.

Dance, Exercise Facilities

Through its Cabot Center for Physical Education, Dockser Hall and Barletta Natatorium, Northeastern University offers a wide variety of specialized facilities, including basketball courts, a dance studio, an indoor athletic field and running track, a gymnastics room, a combative sports room, weight-training rooms, a swimming pool, a crew practice tank, handball courts, and motor performance and exercise physiology laboratories. The Matthews Arena, with seating for more than 5,000 fans, provides home ice to the University's varsity and subvarsity hockey teams and, when the portable playing floor is down on the ice, home court to the University's basketball teams.

For organized athletic activities requiring facilities not available on the main campus, Northeastern maintains several off-campus locations, including the Northeastern Boat House, which is located on Memorial Drive in Cambridge and provides a home for the University's crew teams. The Edward S. Parsons Field, on Kent Street in Brookline, is the playing ground for the football, baseball, women's lacrosse and women's field hockey teams and some intramurals.

Bernard M. Blane Track

The Bernard M. and Jolane Solomon Track, a recently completed outdoor track and field facility in Dedham, has an eight lane, Action Track 200 running surface, and an expansive area for concurrent jumping and field events. This new facility is ready to host dual and championship meet competition, and is a permanent site for Northeastern University track athletes.

Ell Student Center

The Carl S. Ell Student Center provides facilities for student recreation and extracurricular activities. The Alumni Auditorium, with a seating capacity of 1,300, is part of the center. Also included are special drama facilities, a ballroom, a main lounge, a fine arts exhibition area, student offices, conference rooms, a cafeteria with seating for more than 1,000, and the bookstore.

Lane Health Center

A comprehensive program of medical care is provided to all full-time graduate and undergraduate students. The University maintains a Health Services Clinic, which is open for emergencies at all times and is equipped to deal promptly with any medical condition that may arise. All entering full-time students must submit a pre-entrance physical examination form provided by the Lane Health Center prior to registration. Failure to fulfill this requirement can delay registration and result in a penalty fee and an additional fee for a physical examination.

Counseling and Testing Center

Counseling and testing to aid a student or prospect student with career, educational, or personal concerns are available days and certain weekday evenings until 8:30 p.m. Information and appointments may be obtained by calling 617-437-2142 or by visiting the Counseling and Testing Center.

Office of Services for the Handicapped

Any student who has a disability-related special need, no matter how minor or individual, can receive reasonable support services from the Office of Services for the Handicapped (OSH). Frequently, students are uncertain about how they may be aided by this office, and in these situations a discussion of possible alternatives can be quite helpful. OSH provides a wide range of support services to eliminate the competitive disadvantages that a disability may create. Services are individually tailored to meet the needs of each student.

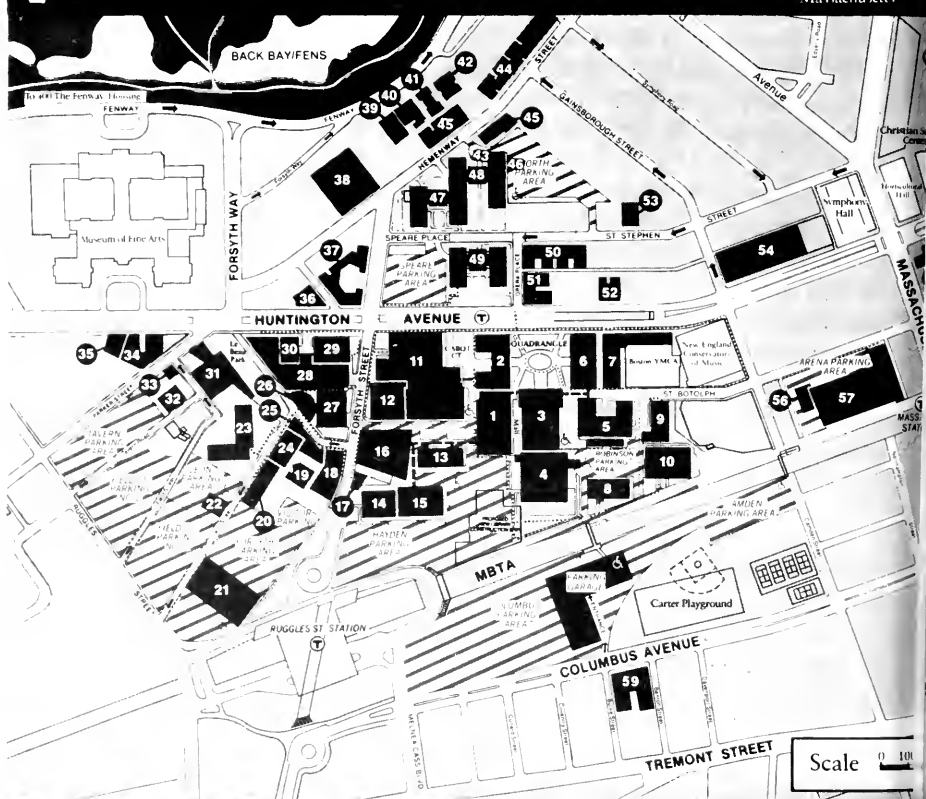
The types of assistance available from OSH include orientation, help with registration and preregistration, operating as an information clearing house, counseling assistance in finding housing, and services for the visually impaired, hearing-impaired, wheelchair-users, or mobility-impaired student, and learning disabled student.

OSH is also the gathering place for the Disabled Students Organization of Northeastern University, which works cooperatively with OSH to plan programs and

improve accessibility of services for handicapped persons at Northeastern.

Network Northeastern (NNU) represents the University's entry into the age of education by telecommunications. The network's main mode of operation utilizes the microwave-based Instructional Television Fixed Service (ITFS) system, by means of which education services are delivered directly to company sites and other remote locations within a thirty-mile radius of Northeastern's Boston Campus. With this service, live classroom instruction is telecast in color to remote sites, where it is viewed in reception rooms equipped with television monitors and a telephone-based talk-back system. During the presentation, the off-campus students are able to participate as fully in the instruction as can students sitting in the originating classroom on campus. A courier service is provided to collect and deliver homework assignments and to serve as the off-campus students' link to the bookstore, Registrar, and other campus services.

Network Northeastern currently offers courses in graduate engineering, graduate computer science, undergraduate engineering technology, state-of-the-art development courses, and noncredit nursing courses. This instruction is telecast daily between 8:00 a.m. and 10:30 p.m. on four channels to off-campus students at twenty-two company sites and two suburban campuses.



Academic and Service Buildings

- 22** African-American Institute (AF)
- 12** Barletta Natatorium (BN)
- 19** Boiler Plant
- 7** Boston YMCA (BY)
- 11** Cabot Physical Education Building (CB)
- 39** Cahners Hall (CA)
- 28** Cargill Hall (CG)
- 13** Churchill Hall (CH)
- 59** Columbus Place
(716 Columbus Avenue) (CP)
- 9** Cullinane Hall (CN)
- 40** Cushing Hall (CU)
- 14** Dana Research Center (DA)
- 27** Dockser Hall (DK)
- 6** Dodge Library (DG)
- 3** Ell Student Building (Auditorium) (EL)
- 4** Ell Student Center (Student Lounge) (EC)
- 16** Forsyth Building (FR)
- 17** Forsyth Building Annex (FA)
- 38** Forsyth Dental Building (FE)
- 1** Hayden Hall (HA)
- 33** Hallel-Frager (HF)
- 24** Holmes Hall (HO)
- 56** 236 Huntington Avenue (HU)

- 54** Huntington Plaza
(271 Huntington Avenue) (HN)
- 10** Hurtig Hall (HT)
- 26** Kariotis Hall (KA)
- 41** Kerr Hall (Faculty Center) (KH)
- 29** Knowles Center (Gryzmish Hall) (KG)
- 29** Knowles Center (Volpe Hall) (KV)
- 25** Lake Hall (LA)
- 57** Matthews Arena (MA)
- 58** Matthews Arena Annex (MX)
- 20** Meserve Hall (ME)
- 5** Mugar Life Science Building
(Peabody Health Professions Center) (MU)
- 18** Nightingale Hall (NI)
- 31** Parker Building (PA)
- 5** Peabody Center
- 2** Richards Hall (RI)
- 8** Robinson Hall (RB)
- 21** Ruggles Building (11 Leon Street) (RU)
- 15** Snell Engineering Center (SN)
- 49** 122 St. Stephen Street (SS)
- 30** Stearns Center (ST)
- 55** Symphony Place
(334 Massachusetts Avenue) (SY)
- 32** 26 Tavern Road (TA)

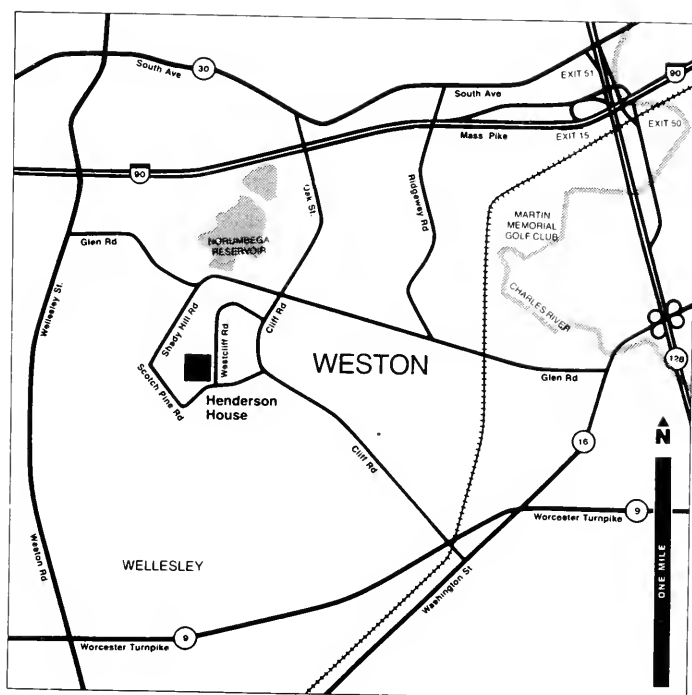
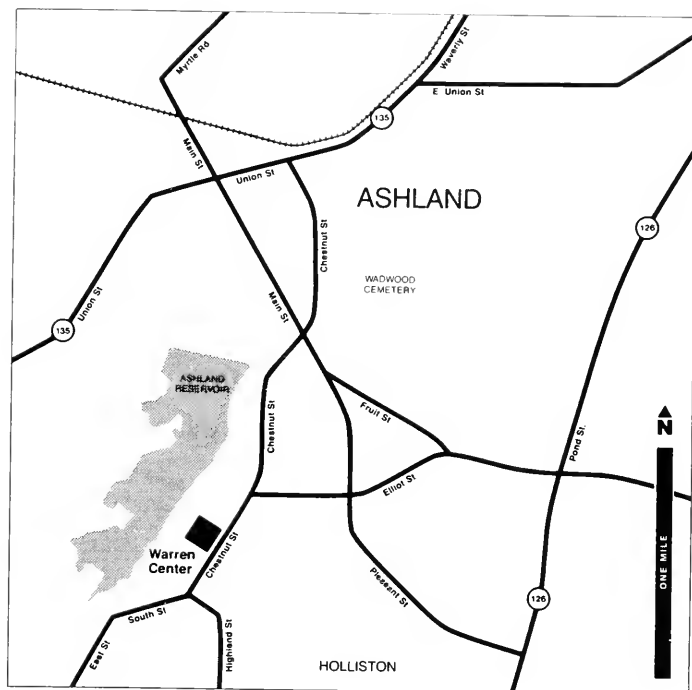
Key

- Academic, Residential, and Service Buildings
- Handicapped Parking
- Handicapped Routes
- Parking Areas
- Street Direction
- Underground Tunnel

Maps are provided by the
Visitor Information Center
115 Richards Hall, extension 2736
Some buildings on this map are used but
not owned by Northeastern University.

Residence Buildings

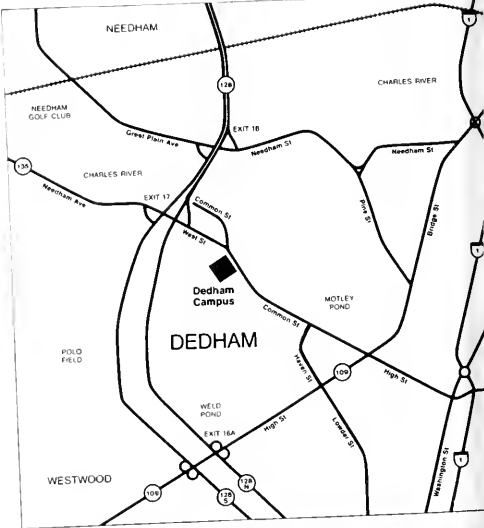
- 34** Burstein Hall
- 51** 337 Huntington Ave.
- 43** 115-119 Hemenway St.
- 46** 142-148 Hemenway Street
- 45** 153/157-163 Hemenway St.
- 36** 407 Huntington Ave.
- 52** 319 Huntington Ave.
- 41** Kerr Hall
- 53** Light Hall
- 42** Melvin Hall
- 35** Rubenstein Hall
- 44** Smith Hall
- 48** Speare Hall
- 49** Stetson East
- 47** Stetson West
- 50** 106/110/116/122 St. Stephen St.
- 23** West Apartments
- 37** White Hall
- 7** YMCA



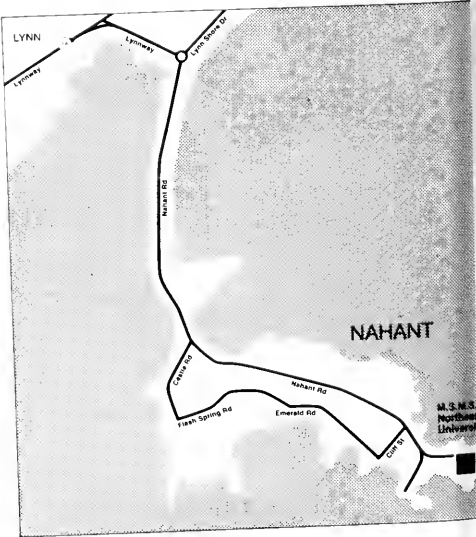
Burlington Campus



Dedham Campus



Nahant Campus



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- 2 Member of the Board of Trustees**
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Northeastern University's Mission

Northeastern University's mission, as a large urban university founded on the cooperative model of education, is to provide individuals with the opportunity for upward mobility through excellence in education. The University achieves its mission through curricula that value equally knowledge for its own sake, knowledge as a means to success in the workplace, and knowledge as a cornerstone of personal achievement and satisfaction.

Achieving Northeastern University's mission requires excellence in teaching, and teaching remains the central activity of Northeastern's faculty. By offering undergraduate and graduate programs that are rigorous, relevant, and rewarding, the University provides a solid structure for educational excellence. Northeastern University is also committed to the search for knowledge through the scholarly and artistic undertakings of its faculty and students.

A central mandate of Northeastern University is to offer students the opportunity to apply directly lessons of the classroom and laboratory to the workplace through cooperative education. For three quarters of a century, cooperative education has been the keystone of Northeastern's uniqueness. As an increasing percentage of the nation's population enters the workforce, and new technologies continue to change the nature of work, the University has rededicated itself to helping the cooperative plan keep pace with those changes.

Northeastern University is committed to serving the educational needs of a diverse student population in an amenable physical environment. The University believes that its mission can be achieved only if the student body is not limited by economic status, cultural or racial background, geographic origin, sex, or age. Northeastern has a long history of serving the educational needs of the non-traditional student, providing degree and non-degree programs for people whose circumstances prevent them from following the standard college regimen.

Looking beyond the confines of the campus, Northeastern University is determined to maintain and strengthen its reputation as a friend to the city of Boston and a partner of the Commonwealth of Massachusetts. The University's obligation to serve the community of which it is an integral part is fulfilled primarily through the educational enterprise. Through its numerous outreach programs, the University has made striking contributions to the community in the applied social sciences, in high technology, and in the arts. Northeastern University will continue to contribute in these and other ways to the region's overall quality of life and to its economic vitality.

Accreditation Statement

Northeastern University is accredited by the New England Association of Schools and Colleges, Inc., a non-governmental, nationally recognized organization whose affiliated institutions include elementary schools through collegiate institutions offering postgraduate instruction.

Accreditation of an institution by the New England Association indicates that it meets or exceeds criteria for the assessment of institutional quality periodically applied through a peer group review process. An accredited school or college is one which has available the necessary resources to achieve its stated purposes through appropriate educational programs, is substantially doing so, and gives reasonable evidence that it will continue to do so in the foreseeable future. Institutional integrity is also addressed through accreditation.

Accreditation by the New England Association is not partial but applies to the institution as a whole. As such, it is not a guarantee of every course or program offered, or the competence of individual graduates. Rather, it provides reasonable assurance about the quality of the opportunities available to students who attend the institution.

Inquiries regarding the status of an institution's accreditation by the New England Association should be directed to the administrative staff of the school or college. Individuals may also contact the New England Association of Schools and Colleges, the Sanborn House, 15 High Street, Winchester, Massachusetts, 01890, 617-729-6762.

Delivery of Services

The University assumes no liability, and hereby expressly negates the same, for failure to provide or delay in providing education or related services or facilities or for any other failure or delay in performance arising out of or due to causes beyond the reasonable control of the University, Which Causes include, without limitation, power failure, fire, strikes by university employees or others, damage by the elements and acts of public authorities. The University will, however, exert reasonable efforts when in its judgment it is appropriate to do so, to provide comparable or substantially equivalent services, facilities or performance, but its inability or failure to do so shall not subject it to liability.

The Northeastern University catalog contains current information regarding the University calendar, admissions, degree requirements, fees, and regulations, and such information is not intended to be and should not be relied upon as a statement of the University's contractual undertakings.

Northeastern University reserves the right in its sole judgment to promulgate and change rules and regulations and to make changes of any nature in its program, calendar, admissions policies, procedures and standards, degree requirements, fees, and academic

schedule whenever it is deemed necessary or desirable, including, without limitation, changes in course content, the rescheduling of classes, canceling of scheduled classes and other academic activities and requiring or affording alternatives for scheduled classes and other academic activities, in any such case giving such notice as is reasonably practicable under the circumstances.

Northeastern will do its best to make available to you the finest education, the most stimulating atmosphere and the most congenial conditions it can provide. But the quality and the rate of progress of your academic career is in large measure dependent upon your own abilities, commitment, and effort. This is equally true with respect to professional advancement upon completion of the degree or program in which you are enrolled. The University cannot guarantee that you will obtain or succeed at any particular job; that will depend upon your own skills, achievement, presentation, and other factors such as market conditions at that time.

Similarly, in many professions and occupations there are increasing requirements imposed by federal and state statutes and regulatory agencies for certification or entry into a particular field. These may change during the period of time when you are at Northeastern and they may vary from state to state and from country to country. While the University stands ready to help you find out about these requirements and changes, it is your responsibility to initiate the inquiry because the University has no other way of knowing what your expectations and understandings are.

In brief, the University is there to offer you educational opportunities and choices and to assist you in finding the direction in which you may want to steer your educational experience, but you are a partner in this venture with an obligation and responsibility to yourself.

Family Educational Rights and Privacy Act

In accordance with the Family Education Rights and Privacy Act of 1974, Northeastern University permits its students to inspect their records, whenever appropriate, and to challenge specific parts of them when they feel it is necessary to do so. Specific details of the law as it applies to Northeastern are printed in the student handbooks and are distributed annually at registrations of the University colleges and graduate schools.

Office of Services for the Handicapped

The Office of Services for the Handicapped (OSH) provides a variety of support services and general assistance to all of Northeastern's disabled students and employees. The University's efforts to comply with Section 504 of the Rehabilitation Act of 1973 are coordinated by Ruth Bork, OSH Director, 5 Ell Center, 617-437-2675 (TTY number is 437-2730).

Northeastern University's Antidiscrimination Policy

Northeastern University is committed to a policy of equal opportunity for all students and employees without regard to race, color, religion, sex, sexual preference, national origin, handicap, or veteran status. The University prohibits discrimination in all matters involving admissions, registration, and all official relationships with students, including evaluation of academic performance.

Equal Opportunity Employment Policy

Northeastern University is an equal opportunity employer. It is institutional policy that there shall be no discrimination against any employees or application for employment because of race, color, religion, sex, age, national origin, handicap, or veteran status.

Northeastern also prohibits discrimination against any employee regarding upgrading, demoting, or transfer, layoff or termination, rates of pay or other forms of compensation and selection for training. In addition, Northeastern adheres to Affirmative Action guidelines in all recruitment endeavors.

Further, Northeastern will not condone any form of sexual harassment (which is defined as the use of unwelcome sexual advances, requests for favors, and other verbal or physical conduct of a sexual nature) as an explicit or implicit condition of employment, the basis for employment decisions, or as interfering with an individual's work performance by creating an intimidating, hostile or offensive work environment.

Inquiries concerning our equal opportunity policies may be referred to the University Title IX Coordinator/Compliance Office for Section 504 of the Rehabilitation Act of 1973, Affirmative Action Office, Richards Hall, 617-437-2133.

Emergency Closing of the University

Northeastern University has made arrangement to notify student faculty, and staff by radio when it becomes necessary to cancel classes because of inclement weather. AM radio stations WBZ (1030), WEEI (590), WHDH (850), WRKO (680), and FM stations WBCN (104.1), and WROR (98.5) are the stations authorized to announce the University's decision to close. Since instructional television courses originate from live or broadcast facilities at the University neither the classes nor the courier operate when the University is closed.

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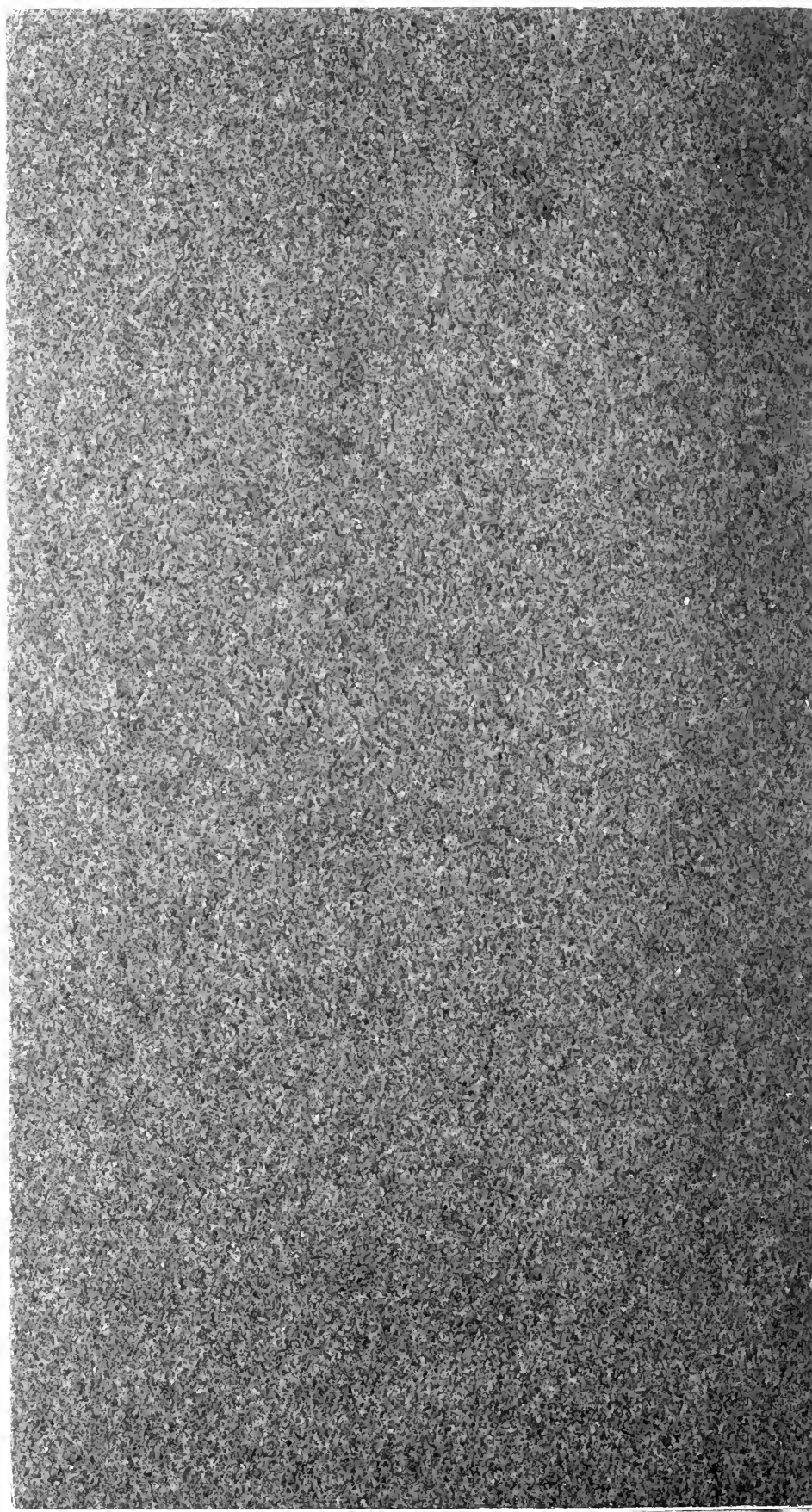
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University College

Part-time
Undergraduate
Programs
1989-1990



Northeastern
University

University College Bulletin

Part-time Programs 1989-1990

**Part-time day and evening
undergraduate programs in:**

- **Business Administration**
- **Criminal Justice and Security**
- **Health Professions and Sciences**
- **Liberal Arts**

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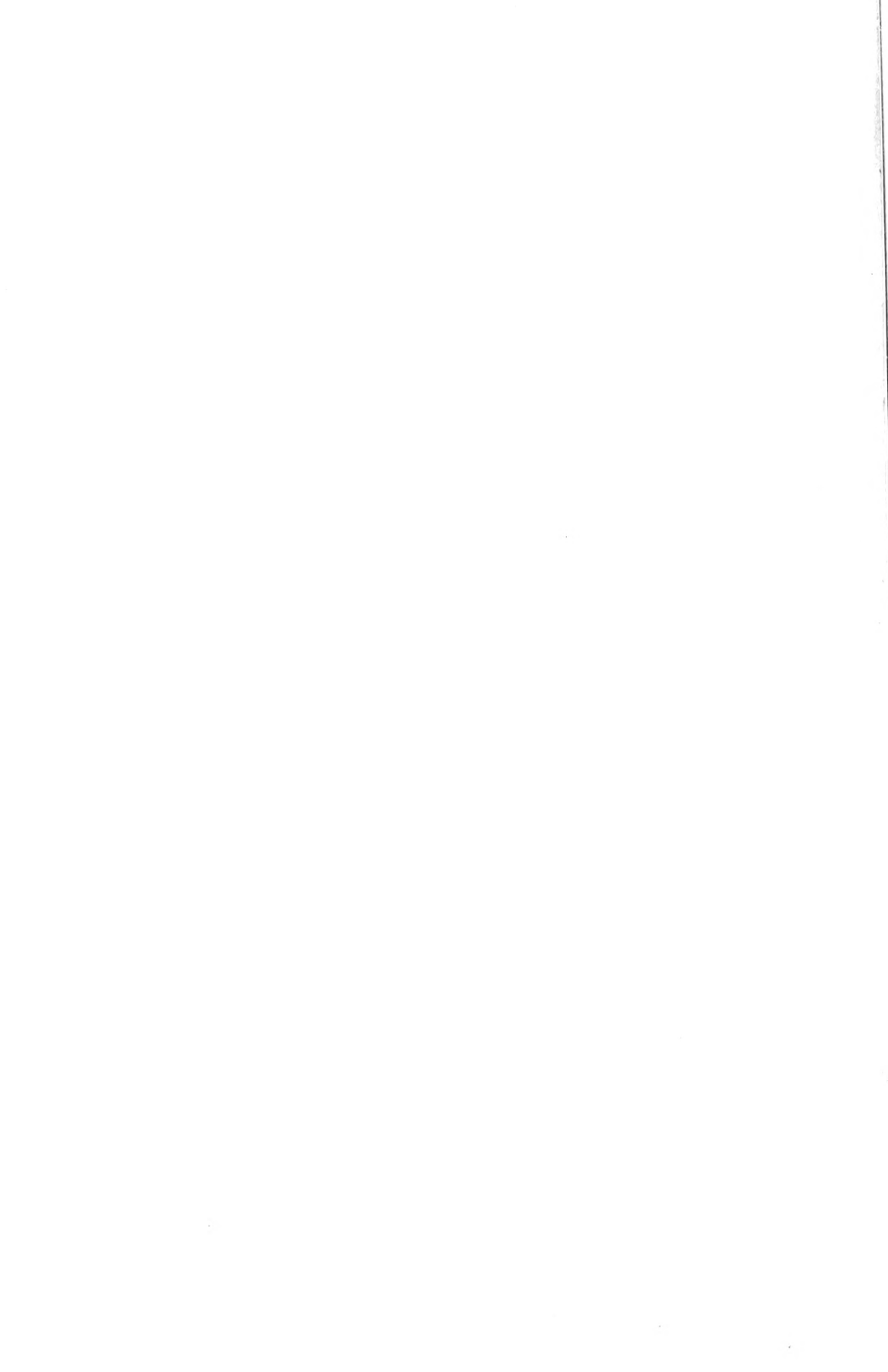
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About University College

1989-1990 Academic Calendar



**Fall Quarter 1989
Classes Begin:**
Monday, September 25, 1989

**Winter Quarter 1990
Classes Begin:**
Tuesday, January 2, 1990

**Spring Quarter 1990
Classes Begin:**
Monday, April 2, 1990

**Summer Quarter 1990
Classes Begin:**
Monday, June 18, 1990

Registration Dates:
F-Fall, W-Winter, Sp-Spring, S-Summer

Belmont

- F - Wednesday, September 6 and Tuesday, September 12, 5:30-8 p.m.
W - Tuesday, December 5, 5:30-8 p.m.
Sp - Tuesday, March 13, 5:30-8 p.m.

Boston Main Campus

- F - Tuesday-Friday, September 5-8, 9:30 a.m.-7 p.m.
Saturday, September 9, 9 a.m.-12 noon
Monday-Wednesday, September 11-13, 9:30 a.m.-7 p.m.
W - Monday-Thursday, December 4-7, 9:30 a.m.-7 p.m.
Sp - Monday-Thursday, March 12-15, 9:30 a.m.-7 p.m.
S - First term: Monday-Thursday, June 4-7, 9:30 a.m.-7 p.m.
S - Second term: Monday, Tuesday, July 9-10, 9:30 a.m.-7 p.m.

Downtown Boston Campus (5 Liberty Square)

- F - Thursday, September 7, 11 a.m.-7 p.m.
Monday-Tuesday, September 11-12, 11 a.m.-7 p.m.
W - Monday, December 4, 11 a.m.-7 p.m.
Sp - Monday, March 12, 11 a.m.-7 p.m.

Burlington Suburban Campus

- F - Wednesday-Thursday, September 6-7, 5:30-8 p.m.
Friday, September 8, 12 noon-3 p.m. and 5:30-8 p.m.
Monday-Tuesday, September 11-12, 5:30-8 p.m.
W - Monday-Wednesday, December 4-6, 5:30-8 p.m.
Sp - Monday-Wednesday, March 12-14, 5:30-8 p.m.
S - First term, Monday-Wednesday, June 4-6, 5:30-8 p.m.
S - Second term, Monday, July 9, 5:30-8 p.m.

Chelmsford High School

- F - Thursday, September 7 and Tuesday, September 12, 5:30-8 p.m.
W - Tuesday, December 5, 5:30-8 p.m.
Sp - Tuesday, March 13, 5:30-8 p.m.

Dedham Campus

- F - Thursday, September 7 and Monday, September 11, 5:30-8 p.m.
 W - Monday, December 4, 5:30-8 p.m.
 Sp - Monday, March 12, 5:30-8 p.m.

Framingham North High School

- F - Tuesday, September 5 and Monday, September 11, 5:30-8 p.m.
 W - Monday, December 4, 5:30-8 p.m.
 Sp - Monday, March 12, 5:30-8 p.m.

Marlboro High School

- F - Wednesday, September 6 and Monday, September 11, 5:30-8 p.m.
 W - Monday, December 4, 5:30-8 p.m.
 Sp - Monday, March 12, 5:30-8 p.m.

Marshfield High School

- F - Thursday, September 7 and Tuesday, September 12, 5:30-8 p.m.
 W - Tuesday, December 5, 5:30-8 p.m.
 Sp - Tuesday, March 13, 5:30-8 p.m.

Milford High School

- F - Thursday, September 7 and Tuesday, September 12, 5:30-8 p.m.
 W - Tuesday, December 5, 5:30-8 p.m.
 Sp - Tuesday, March 13, 5:30-8 p.m.

Peabody Veterans Memorial High School

- F - Wednesday, September 6 and Monday, September 11, 5:30-8 p.m.
 W - Monday, December 4, 5:30-8 p.m.
 Sp - Monday, March 12, 5:30-8 p.m.

Stoneham High School

- F - Thursday September 7 and Tuesday September 12, 5:30-8 p.m.
 W - Tuesday, December 5, 5:30-8 p.m.
 Sp - Tuesday, March 13, 5:30-8 p.m.

Westwood High School

- F - Thursday, September 7 and Tuesday, September 12, 5:30-8 p.m.
 W - Tuesday, December 5, 5:30-8 p.m.
 Sp - Tuesday, March 13, 5:30-8 p.m.

Weymouth North High School

- F - Wednesday, September 6 and Monday, September 11, 5:30-8 p.m.
 W - Monday, December 4, 5:30-8 p.m.
 Sp - Monday, March 12, 5:30-8 p.m.

Holidays and Observances**Fall Quarter: Classes begin September 25**

- Columbus Day -
 Monday, October 9
 Veterans' Day -
 Saturday, November 11
 Thanksgiving Recess -
 Thursday-Saturday, November 23-25
 Christmas Vacation -
 Monday, December 18-Monday, January 1

Winter Quarter:**Classes begin January 2, 1990**

- Martin Luther King Jr.'s Birthday -
 Monday, January 15
 Presidents' Day -
 Monday, February 19
 Spring Recess or make-up period for lost snow days-Monday, March 26-Sunday, April 1
Spring Quarter: Classes begin April 2, 1990

- Patriots' Day -
 Monday, April 16
 Memorial Day -
 Monday, May 28
 Commencement -
 Sunday, June 17

Summer Quarter: Classes begin June 18, 1990

- Independence Day -
 Wednesday, July 4
 Labor Day -
 Monday, September 3

Final Exam Periods

- F - Monday-Sunday, December 11-17
 W - Monday-Sunday, March 19-25
 Sp - Monday-Sunday, June 11-17
 S - Final exam for summer quarter held during last class session of each term.

Calendar changes may be made. The University Community will be notified if such changes occur.

About University College

Profile of the College

John W. Jordan, *Dean*

Ralph T. Vernile, Jr., *Associate Dean for Administration*

Marilyn S. Wiener, *Associate Dean for Academic Programs*

Where would you like to be one year from now, five years from now, or even ten? What possibilities for your future intrigue you the most, and where might they take you? With your plans and ideas to guide you, you can set your sights on any direction at University College. Whether you already have a definite plan or want to investigate new possibilities, our programs and resources are designed to help you get to where you want to be. The College attracts a talented and purposeful student body that represents a spectrum of educational, career, and personal interests. The University encourages and supports your explorations, and at the same time the diversity of direction pursued by part-time day and evening students enlivens the entire Northeastern University community.

University College is the part-time undergraduate division of Northeastern University, which has long been a leader in educational programs for adults. We're called University College because we tap the energies and resources of the entire University. Unlike other institutions offering similar programs, Northeastern opens all its doors, giving you unequaled access to the academic facilities you need. At University College, we constantly evaluate and update our programs

to satisfy changing professional, cultural, and social needs and interests of all our students.

Offering What You Want: Our Programs

Naturally, Northeastern University offers all the traditional academic programs you expect from a large university, including timely and innovative programs in business administration, criminal justice and security, health professions and sciences, and liberal arts. Among these programs are five bachelor's degree concentrations in business that carry the extra prestige of full accreditation by the American Assembly of Collegiate Schools of Business.

Many students come to Northeastern University to take specific, job-related courses. To serve these students, we have developed more than thirty certificate programs. In most cases, these programs incorporate or build on the major concentration courses required in each of our professionally focused undergraduate degree programs.

Northeastern also offers practical, part-time associate degree programs for students who are seeking a first-rate, first-level college degree, as well as bachelor's degrees in all four areas: Business Administration, Criminal Justice and Security, Health Professions and Sciences, and Liberal Arts.

Getting the Attention You Need: Class Size

Everyone knows Northeastern is big. What many people don't realize is that because we operate at fifteen different locations, our classes tend to be small. And many of our specialized degree and certificate programs enroll only small numbers of students because of their unique focus. Last year, our average class size was fifteen students. Many classes ran with fewer students, and only 10 percent of all classes offered ran with enrollments larger than twenty-seven.

Making Our Programs Work For You: Convenience

We know you're busy, and finding the time to continue your education can be a real challenge. To help you out, Northeastern not only schedules classes at fifteen different locations in eastern Massachusetts, but also provides different course formats. Recently the University added six- and eight-week courses to the regular schedule of twelve-week courses to make things that much more convenient.

Offering Knowledge and Experience: The Faculty

A course is only as good as its teacher. That's why University College carefully selects both full-time Northeastern University faculty and practicing professionals for its teaching staff of 1,650. Corporate executive officers, published authors, established health professionals, artists, graphic designers, computer experts, lawyers, professors, and others offer students the benefit of their experience and current information about how careers in their fields are changing. Many have found teaching adults particularly rewarding and have expressed their pleasure at having such committed, hard-working, and enthusiastic students.

Meeting Your Colleagues: The Students

Approximately 15,000 adults come to University College every year to pursue a degree, update their careers with a certificate, or take a course in a subject that has long interested them. These adult students range in age from 18 to 80 and come from all walks of life: women re-entering the work force, young men and women seeking to start new careers, older people polishing their skills, people of every age intent on finishing an education that time or circumstances interrupted. All have one thing in common—they are making a change in their lives through their own actions, expanding their world by investing in themselves. This diversity is a source of stimulation and enrichment for all—students, faculty, and administration alike.

We're Here to Help: Counseling Services

University College offers a range of career and academic counseling services to assist you in making both educational and career decisions. The College provides academic advisers and career counselors, offers credit and non-credit career-planning workshops and special programs, and serves as a link to other student support services offered by Northeastern University.

Open House and Registration Week Orientation Programs

Individuals who are thinking about enrolling in University College for the first time are encouraged to attend an Open House. Open Houses introduce potential students to the many University College programs and services designed to meet the educational, job-related, and personal needs of adult, part-time students. They also orient new students to the University as a whole and address concerns that many students have about

- transfer credit,
- international student applications,
- admission to degree programs, and
- certificate programs.

Students currently enrolled in University College are also invited to attend an Open House.

Open houses are ordinarily scheduled each quarter at selected campus sites at or about the same time that registration takes place. Students wishing to attend should reserve a place by calling the Office of Academic and Student Affairs, 617-437-2400 (voice), 617-437-2825 (TTY). Details appear in the *Schedule Guide* for each term.

Academic Advising

Academic advisers are available by appointment to talk with University College students about courses, transfer credit, degree requirements, career counseling referrals, and other matters of individual concern.

To arrange an appointment at a specific campus, please call the appropriate number, as listed below.

- Main Boston Campus: Advisers are available weekdays from 8:30 a.m. to 7 p.m. Call 617-437-2400 (voice), or 617-437-2825 (TTY, for the hearing impaired only).

- Burlington Suburban Campus: Call 617-272-5500.
- Downtown Boston Campus (5 Liberty Square): Call 617-367-6373.
- All other branch locations: Advisers are available from 5:30 to 7 p.m. on the evenings when classes are in session. Call 617-437-5544 for an appointment.

During registration, the advising staff in Boston is available to meet with students on a walk-in basis from 9 a.m. to 7 p.m. Students may also call in with questions during these times. In addition, registration advisers are available at all campuses during registration hours to assist students with course selection and to explain registration procedures.

The Health Professions Advisory Committee provides counseling for students interested in taking courses to meet medical or dental school entrance requirements. For medical school entrance requirements and procedures, contact Professor Thomas McEneaney 617-437-2430. For information on the scheduling of science courses that meet these requirements, call 617-437-2818.

Tutorial Services

University College offers tutorial assistance in several subjects. Tutoring, which is on a one-to-one basis, provides an opportunity for student and tutor to focus on specific problems that might not have been covered during class time. You may request tutorial information from the Office of Academic and Student Affairs, 617-437-2400. A flyer describing tutorial services is also available at all campus locations.

Self-Assessment and Career Development

Often one of the strongest motivations for continuing education is the desire for career advancement or change. In order to help students develop career and educational planning skills, University College offers a three-quarter-hour course in career development (INT 4110). For more information, see the course description on page 198 of this *Bulletin*.

Job-Search Seminars

Each quarter the Department of Career Development and Placement offers a series of two- and three-hour evening job-search seminars. The seminars are specifically designed for students seeking a job change and who have identified the field or career area in which they would like to work.

The seminars, offered at several campus locations, are intended to help students assess their skills, develop effective job-search strategies, write resumes, and prepare for job interviews. Seminar schedules are announced in the student newsletter, *Perspectives*, and in classes prior to the start of each series. Students who wish to participate in the job-search seminars must reserve a place by calling the Department of Career Development and Placement at 617-437-2428.

Career Development and Placement Services

The Department of Career Development and Placement has designed services to support your professional development. The department can help you to identify career paths, establish a network of professional contacts, and assist you with placement. Free services for University College students include:

- individual career counseling
- job placement advising
- resume referral to employers
- job bank of current employment opportunities
- company files and employer contacts
- panel presentations on careers of interest
- job-search seminars
- annual Career Expo (held during evening hours)
- on-campus corporate recruiting for seniors
- credential service for individuals applying to graduate school

Students may ask to have copies of current job notices sent to them by mail. There is a \$15 charge per quarter for this service.

Counselors are available at the Boston, Burlington, and Dedham campuses. To make an appointment or to receive additional information on any of the department's services, call 617-437-2428 or visit the Career Development and Placement Office on the Boston campus in 124 Ruggles Building. Call for office hours.

Counseling and Testing Services

Enrolled and prospective students can receive confidential counseling or testing to address personal, educational, or career concerns. Assistance is available to all students during days and certain weekday evenings until 8:30 p.m. at the Counseling and Testing Center. For information and appointments, call 617-437-2142 or drop in at 302 Ell Building.

Personal Counseling

People come to the center for help with a variety of personal concerns. Anxiety and depression, adjustment reactions to college life, personal or family relationship concerns, drug and alcohol abuse, and sexual adjustment questions are among the issues that University College students may want to discuss with a professional therapist. The center is committed to short-term therapy, with a maximum of twelve consecutive counseling sessions. If the center cannot meet your needs, appropriate referrals are provided.

Academic and Life Skills Development Workshops

Academic and life skills development workshops are offered each term, generally during the day. The Study Skills Development Workshop, among the most popular of these, helps students become more effective in organizing their time, taking notes, preparing for exams, and other areas of academic performance. Other workshops include Stress Management, Assertiveness Training, Overcoming Procrastination, Surviving Parental Alcoholism, Food Challenges and Choices, and Surviving Family Break-up.

Educational-Vocational Counseling

With so many fields to choose from, students sometimes have difficulty selecting a major or a career. You may want help in defining your interests, abilities, and values. At the center, educational-vocational counseling usually involves an evaluation of the student's interests, aptitudes, abilities, values, and personality characteristics. Many kinds of tests, available at the center, may be used in this process. Counseling is done on an individual basis, although small groups may be organized when this approach seems useful.

Career Information

The center maintains a small reference library of vocational resources. In addition, a computer is available to help students in obtaining career information, as well as to help clarify values, skills, and interests.

Testing Materials

Information and application packets for such standardized tests as the GRE, LSAT, GMAT, MAT, and CLEP exams, are available at the center. CLEP exams are given at the center ten times each year, and the center is also a national testing site for the LSAT, GMAT, MAT, and other exams.

University College Offices

General Information

617-437-2400

617-437-2825 (TTY)

Office of the Registrar

120 Hayden Hall

617-437-2300

Monday-Thursday,

8:30 a.m.–7:30 p.m.

Friday,

8:30 a.m.–4:30 p.m.

Belmont High School

221 Concord Avenue

617-484-4418

Tuesday and Thursday,

5:30–10 p.m.

Boston Main Campus

180 Ruggles Building

360 Huntington Avenue

617-437-2400

TTY: 617-437-2825

(for the hearing-impaired only)

Monday-Friday,

8:30 a.m.–8:30 p.m.

Saturday,

8:30 a.m.–1 p.m.

Downtown Boston Campus

5 Liberty Square

617-367-6373

Monday-Thursday,*

7 a.m.–10 p.m.

Friday,

8:30 a.m.–4:30 p.m.

Burlington Suburban Campus

South Bedford Road

617-272-5500

Monday-Friday,

8 a.m.–10 p.m.

Saturday,

8 a.m.–12 noon

Burlington High School

123 Cambridge Street

617-273-1870

Monday-Thursday,

5:30–10 p.m.

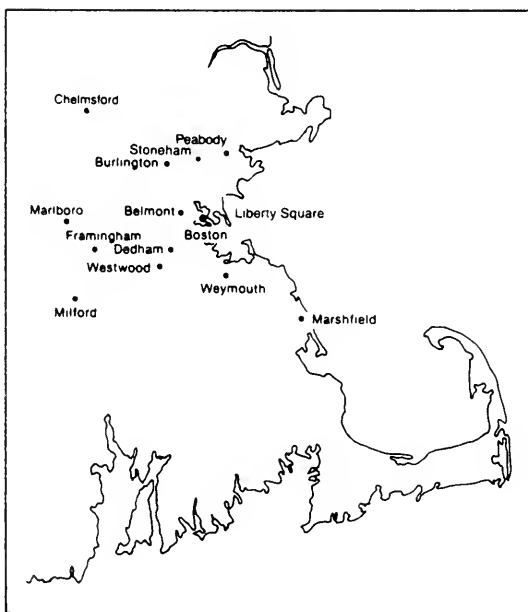
Chelmsford High School

200 Richardson Road

508-251-8792

Tuesday and Thursday,

5:30–10 p.m.



Dedham Campus

Common Street
617-329-8000
Monday–Thursday,
8 a.m.–10 p.m.
Friday,
8:30 a.m.–4:30 p.m.
Saturday,
8 a.m.–1:00 p.m.

Framingham North High School

A Street
508-877-2333
Monday–Thursday,
5:30–10 p.m.

Marlboro High School

Bolton Street
508-485-4122
Monday and Wednesday,
5:30–10 p.m.

Marshfield High School

Forest Street
617-837-1835
Tuesday and Thursday,
5:30–10 p.m.

Milford High School

31 West Fountain Street
508-473-2565
Tuesday and Thursday,
5:30–10 p.m.

Peabody Veterans Memorial High School

485 Lowell Street
508-535-1226
Monday and Wednesday,
5:30–10 p.m.

Stoneham High School

149 Franklin Street
Tuesday and Thursday,
5:30–10 p.m.

Westwood High School

200 Nahatan Street
617-329-3030
Monday–Thursday,
5:30–10 p.m.

Weymouth North High School

1051 Commercial Street
617-335-9112
Monday–Thursday,
5:30–10 p.m.

Summer Office Hours**Office of the Registrar**

120 Hayden Hall
Monday–Thursday,
8:30 a.m.–7:30 p.m.

Boston Main Campus

180 Ruggles Building
Monday–Thursday,
8 a.m.–8:30 p.m.

Downtown Boston Campus

5 Liberty Square
Monday–Thursday,
7:30 a.m.–10 p.m.*

Burlington Suburban Campus

Monday–Thursday,
8 a.m.–10 p.m.

Dedham Campus

Monday–Thursday,
8:30 a.m.–10 p.m.
Friday,
8 a.m.–4:30 p.m.

Framingham North High School

Monday and Wednesday,
5:30–10 p.m.

Weymouth North High School

Tuesday and Thursday,
5:30–10 p.m.

*Office hours may vary due to changes in class schedules.

Policies and Procedures

Open Enrollment

University College has an open enrollment policy that enables students to take most courses simply by registering for the course. Applications for admission, entrance examinations, and College Board Examination scores are not required. The open enrollment policy applies to both degree and nondegree students at University College. Credits earned for individual courses taken at University College may be applied to a degree program.

Students who are enrolled at University College and who decide to pursue a degree program must apply for admission to the program. See page 14 for more information on the admissions process. Special requirements apply to students entering the Bachelor of Science in Business Administration degree program. For information on the admissions process for this program, please see pages 56–58. Students must be admitted to a degree program in order to be eligible for most financial aid. See page 246 for more information on obtaining financial aid. All international students must be admitted to a degree program in order to apply for an I-20 form. See page 12 for more information on international students.

Both degree and nondegree students are entitled to make use of the student support services offered by University College.

Registration

Students may register for courses by reporting to any University College campus during the registration periods that are scheduled each quarter. It is not necessary to register at the campus where a particular course actually meets; students may register at any campus for a course scheduled at any other campus. Attendance at class, even with the instructor's permission, does not constitute registration unless the student has filled out a registration form. Academic credit will not

be awarded to students who are not properly registered. See the Academic Calendar on pages 2–3 for a complete registration schedule.

Courses listed in this *Bulletin* are not necessarily offered each quarter. *Students may not be able to take all of the courses required for a particular program at any one campus location.* Each fall, winter, spring, and summer quarter the list of courses being offered is printed in a University College *Schedule Guide*. *Schedule Guides* are distributed at all campus locations. To request a schedule by mail, call 617-437-2400.

Course Selection

Academic advisers (see page 5) are available by appointment at all campuses, to help students plan their academic programs and select courses.

Students who have earned credits from other schools are urged to have their transcripts evaluated prior to the registration period to avoid duplicating course work completed elsewhere. Students should allow at least three weeks from the time all transcripts have been received for processing transfer credit petitions. During the official registration periods at all campuses, advisers are available without an appointment to answer general questions and to help students make initial course selections. Because the process of evaluating transfer credit is complex, students should not expect advisers to evaluate their petitions during advising appointments.

Academic Integrity

The Code of Student Conduct states that “any attempt of a student to present as his or her own work that which is not his or her own or aiding and abetting another student in such an attempt” results in a charge of misconduct, which is cause for disciplinary action.

Students must accept the responsibility to be honest and to respect ethical standards in meeting their academic assignments and requirements. Integrity in academic life requires that students demonstrate intellectual and academic achievement independent of all assistance except that authorized by the instructor. Consequently, *all* work submitted to meet course requirements, whether it take the form of papers, examinations, laboratory reports, computer projects, quizzes, or any

other work assigned, is expected to be the student's own work.

In the preparation of all papers and other written work submitted to meet course requirements, students should be careful to distinguish between ideas which are their own and those which have been derived from other sources. Proper forms of citation must be used, and sources must be indicated. Students who have questions about these procedures should see their instructors before beginning their projects. Presenting another's work as one's own or improper attribution of sources, is plagiarism.

Computer programs written to meet course requirements, like papers, are to be the original work of the student submitting them. Copying a program from another student or from any other source is a form of academic dishonesty.

Collaboration in the completion of written assignments is also a form of academic dishonesty, unless explicitly permitted by the instructor. Students must acknowledge any collaboration/editing and its extent in all submitted work.

Students may not submit the same paper in two or more courses without the prior written permission of the instructors involved.

Students who fail to meet the responsibility of academic integrity as defined here are subject to disciplinary sanctions ranging from a reduction in grade or failure in the assignment or course to dismissal from the University. Complete disciplinary procedures are outlined in the University College *Student Handbook*.

Academic Monitoring

All students are monitored once each academic year, after the end of spring term. Nondegree students, undeclared majors, and unadmitted students whose quality-point averages fall below 2.0 are contacted by the Office of Academic and Student Affairs and are offered all possible assistance. These students may also be subject to academic review, probation, and dismissal from University College when such action is warranted.

Students who feel they would benefit from academic assistance are encouraged to work closely with an academic adviser. Students may make appointments by calling 617-437-2400 or TTY: 617-437-2825 (for the hearing-impaired only).

Academic Standing Committee

The University College Academic Standing Committee convenes at least once each month, more often if necessary, to consider student petitions and requests for exceptions to the academic policies and procedures contained in this *Bulletin*. The Committee has the power to dismiss students who do not meet the academic standards of University College. The Committee also serves as a hearing board for academic grievances, as outlined in the University College *Student Handbook*.

Attendance

University College expects students to meet attendance requirements in all courses to qualify for credit. Attendance requirements vary, and it is the student's responsibility to ascertain what each instructor requires. Absence from regularly scheduled classes may seriously affect the student's academic standing.

If a student is consistently absent without having made arrangements with the instructor, the instructor may take this to mean that the student has withdrawn and may issue a final grade of "W". Permission to make up work missed because of absence may be granted by the instructor on presentation of a reasonable excuse.

Auditing Policy

Students are permitted to audit courses upon submitting the usual registration forms and on paying the regular tuition fees. There is no reduction in fees for auditing. An auditor may participate in class discussion, complete papers and projects, and take tests and examinations for informal evaluation. However, regardless of the amount or quality of work completed, **academic credit will not be granted at any time for an audited course.**

The student's decision to audit a course must be communicated in writing to the Registrar's Office prior to the fourth class meeting. Exceptions to this procedure cannot be approved without authorization by the University College Academic Standing Committee.

Change of Address or Name

Change of address and/or name should be reported in writing both to the Registrar's Office, 120 Hayden Hall, Northeastern University, 360 Huntington Avenue, Boston, MA 02115, and to the Office of Academic and Student Affairs, 180 Ruggles Building.

Class Changes

University College reserves the right to cancel, divide, or combine classes when necessary. Although this policy ensures that students will almost never be excluded from a class because it is oversubscribed, it also means that a course may occasionally be canceled because of inadequate enrollment. Cancellations are more likely to occur among upper-level or advanced courses than among introductory courses. While students may register as late as the first week of class, cancellation decisions are based on pre-registration figures. **Students are therefore encouraged to register in advance to increase the likelihood that the courses they want will run.** Seniors who are adversely affected by course cancellations should contact an academic adviser or their program office for help in identifying alternatives.

Credit Hours: Quarter-Hour Credit

Credit hours are assigned to a course based on the established educational standard of one credit hour for every three hours of student learning time per week over a term. Thus one hour of lecture or discussion plus two hours of individual study outside of class equals one credit.

Northeastern University operates on a quarter-hour credit system. A quarter-hour credit is the equivalent of three quarters of a semester hour. Most University College courses are assigned three quarter hours (abbreviated "q.h.") of credit and meet for two hours and ten minutes each week.

Students who would like to take courses at Northeastern and then transfer these credits to another school are urged to receive permission from an adviser at the other school prior to registering.

Disciplinary Action

The University College Board of Inquiry has the authority to warn, censure, suspend, expel, or remove from the list of degree candidates any student who, because of disruptive or illegal conduct or poor character, is considered an unsuitable member of the College community. The Board of Inquiry is convened to hear a case when a member of the University College community charges a student with a violation of the Code of Student Conduct. Complete procedures are contained in the University College *Student*

Handbook, which can be obtained at all campus locations or by calling 617-437-2400 (voice) or 617-437-2825 (TTY).

Examinations

Tests are scheduled throughout each quarter at the option of the instructor and are regarded as part of the term's course work. A final examination is held at the end of each quarter in each course unless an announcement is made to the contrary. The procedure for making up final examinations missed due to student absence may be found on page 20.

Homework

The specific work required for each course in University College is determined by the instructor. In general, University College students are expected to spend an average of six to eight hours per week outside of class on assignments for each course. Students who are absent are responsible for obtaining their homework assignments from their instructors or from other students. Homework assignments are not available from the Office of Academic and Student Affairs.

International Students

Northeastern University is authorized under Federal law to enroll *non-immigrant alien* students. International Student Applications must be filed by all non-immigrant students. Because the process of applying to University College is complex, deadlines for completed applications are well in advance of the start of each term:

<i>Deadline</i>	<i>for</i>	<i>Term Starting</i>
July 14, 1989		September 1989 (Fall)
October 13, 1989		January 1990 (Winter)
January 12, 1990		April 1990 (Spring)
April 13, 1990		June 1990 (Summer)

Students who miss the deadline for a given term will need to defer attendance to the following term. Proficiency in English is a prerequisite to admission. Also, there is an application fee of \$75.00.

Questions may be directed to the Office of Academic and Student Affairs, 180 Ruggles Building, 617-437-2400 or to the International Student Office, 270 Holmes Hall, 617-437-2310.

International students who are *resident aliens* in the U.S. must file an International Credentials Evaluation Form for admissions and/or transfer credit and must provide proof of their resident

alien status (green card). There is an evaluation fee of \$45.00. Questions may be directed to the Office of Academic and Student Affairs. (See page 18 Evaluation of International Educational Credentials for further details.)

Maximum Course Load Policy

It is *recommended* that new students and/or students who are working full-time not take more than 12 quarter hours of credit per term. However, students may take up to 18 q.h. per term without special permission. Any student wishing to take more than 18 q.h. in a given term must file a course overload petition with the Office of Academic and Student Affairs *at least one week prior to the start of the term*. In no case may a student with a quality point average under 2.0 take more than 12 q.h. per term.

Petition for Course Overload forms are available from the Office of Academic and Student Affairs, 180 Ruggles Building, 617-437-2400.

Pass/Fail Courses

Students may register for one *elective* course per quarter on a pass/fail basis and may not take more than five pass/fail courses total at University College. To be eligible for pass/fail status, the student must be in good academic standing (have at least a 2.0 quality-point average) and must also meet all prerequisites for the course.

To be graded on a pass/fail basis, the student must file a Pass/Fail Petition and have it signed by an academic adviser. Pass/Fail Petitions are available from the Office of Academic and Student Affairs, 180 Ruggles Building, 617-437-2400. Requests to take a course on a pass/fail basis must be made *prior to the fourth class meeting*. Exceptions to this procedure cannot be approved without authorization from the University College Academic Standing Committee. Please see also the section on Pass/Fail Grades, page 20.

Placement Tests

Placement tests are given to students enrolled in *Critical Writing 1* (ENG 4110), *Business Writing and Reports 1* (ENG 4380), and *Technical Writing 1* (TCC 4101) during the first class session. Some students may be requested to register for *Elements of Writing* (ENG 4011), a three-quarter-hour course offering additional help in writing, or *English for International Students* (ENG 4005, ENG 4006,

or ENG 4007).

Students registering for *Mathematics 1* (MTH 4110) must take a placement test on the first night of class. The results will determine whether the student should take *Basic Mathematics 1* and 2 (MTH 4001 and MTH 4002) prior to taking *Mathematics 1*. Students registering for *College Algebra 1* (MTH 4107) must also take a placement test at the first class meeting. Some students may be asked to register for *Technical Mathematics* (MTH 4006) to help improve their Math skills.

Prerequisites

Before registering for a course, students should read the course description in this *Bulletin* to determine if they need to have taken a prerequisite course. In order to ensure academic success, students are strongly advised to adhere to course prerequisites. Students with questions about prerequisites should contact the program office that administers the course.

Special Students

University College students who wish to take Basic College courses may, in certain instances, enroll on a term-by-term basis. These students must obtain prior approval from both the Office of the Dean of the college offering the course *and* the University College Office of Academic and Student Affairs, 180 Ruggles Building. Students must collect both signatures on a Special Registration Form and submit the form to the Registrar's Office. Tuition is charged at the Basic College rate.

Basic College students who wish to enroll in University College courses must obtain prior approval from the academic dean of their college or, if they are freshmen, from the Office of Freshman Affairs, 203 Ell Building.

Student Records

In accordance with the Family Educational Rights and Privacy Act of 1974, Northeastern University permits students to inspect their records whenever appropriate and to challenge specific parts of them when they feel it is necessary. Specific details of the law as it applies to Northeastern are available in the University College *Student Handbook*.

Students' Rights and Responsibilities

The University subscribes to the view that all students have certain rights and freedoms. For these reasons, the University has adopted

and published specific policies and procedures governing student rights and freedoms, general conduct, student discipline, grievance procedures, disclosure of information from student records, and University judicial procedures. Judicial procedures are related to issues of discipline and conduct, the right of students to appeal judgments of their academic performance, grievances based on the fact that a student is handicapped, and allegations of sexual harassment. All policies and procedures governing the above matters may be found in the University College *Student Handbook*. Copies are available in the Office of Academic and Student Affairs or by calling 617-437-2400. In general, copies are also available at each campus location.

Withdrawal Policy

Students who wish to withdraw from a course must complete a Course Drop Form in the Registrar's Office or notify the Registrar in writing of their intention to withdraw prior to the week in which final examinations are given. These forms are available at all campus locations.

Students who withdraw from a course will have no record of the withdrawal on their transcripts. See page 245 for information on tuition refunds.

Degree Program Policies and Procedures

Applying for Admission to a Degree Program

A student who wishes to be admitted to University College as a degree candidate must follow *one* of the following procedures.

Students are urged to apply for admission as soon as they are eligible. Students must be admitted to a degree program in order to be eligible for most financial aid. Non-immigrant international students must also be admitted to a degree program and must follow the procedures outlined on page 12 International Students. International students who are resident aliens must follow the procedures outlined on page 18 Evaluation of International Educational Credentials.

Option 1

In general, students who want to apply for admission to a degree program must have

- completed at least eighteen quarter hours of credit, which may include transfer credit, and *must* include English courses ENG 4110, ENG 4111, and ENG 4112 or their equivalents;
- a minimum grade-point average of at least 2.0 (C) at University College (i.e. successfully completed at least one U.C. course); and
- a high school diploma or a high school equivalency certificate (GED).

Students who meet these requirements must file an application for admission in the Office of Academic and Student Affairs or at any branch campus. Applications may also be submitted by mail. Call 617-437-2400 (voice) or 617-437-2825 (TTY) to obtain an application. Students will be notified of their acceptance by mail.

Option 2

Students who want to apply for admission but do not meet the above requirements must

- arrange an admission interview with an academic adviser, by calling 437-2400, (367-6373 Downtown or 272-5500 Burlington);
- complete an Option Two application for admission and bring it to the interview,
- bring an official copy of the high school transcript or GED certificate to the interview;
- bring official copies of any college transcripts to the interview.

Interviews may be arranged at the Boston, Burlington and Liberty Square campuses only.

Students who have been admitted to a degree program under Option 2 will have their transcripts reviewed after one academic year to ensure that they are making satisfactory academic progress. Satisfactory academic progress is defined as follows:

- Completion of at least eighteen quarter hours of University College or transfer credit. This credit *must* include English courses ENG 4110, 4111, 4112, or their equivalents.
- A minimum grade-point average of at least 2.0 (C) at University College.

The Office of Academic and Student Affairs will notify the Office of Financial Aid of those students who are not making satisfactory academic progress.

Note: Students who wish to be admitted to the Bachelor of Science in Business Administration degree program must meet additional requirements, as listed on page 56.

Academic Probation

All students are monitored once each academic year after the end of spring term. Students who have been admitted to a degree program must maintain an overall quality-point average of not less than 2.0 (C) and a 2.0 (C) average in the major concentration courses in order to be considered in good academic standing. Any degree student whose overall quality-point average or major concentration average falls below 2.0 is placed on academic probation for a one-year period. Students receive formal notification of their probation and the level of performance required to return them to good academic standing. Students on probation are encouraged to meet with their assigned adviser at least once per term.

Students who do not raise their overall quality-point average or major concentration to 2.0 within the probationary period will have their cases referred to the University College Academic Standing Committee for review. This Committee has the power to remove students from their degree programs but allow them to continue taking courses at University College, or to dismiss them from University College.

Students who have been dismissed from University College must petition the Academic Standing Committee no sooner than one year from the date of dismissal if they wish to return to University College.

Additional Degree Status

Any student who has received a bachelor's-level degree from University College and wishes to earn a second bachelor's degree must fulfill an additional 45 quarter hours in residence after full completion of the first degree, at least 12 quarter hours of which must be in the new major concentration.

A student who has already received an associate's- or bachelor's-level degree from University College and who wishes to earn a second degree at the associate's level must fulfill an additional 24 quarter hours in residence after full completion of the first degree, at least 6 quarter hours of which must be in the new major concentration.

In either case, the additional degree and

major must be distinctly different from the previously conferred degree. This policy does not apply to students earning an associate's degree who wish to go on for a bachelor's degree.

Certificates Contained Within Degrees

When a certificate is contained within a degree program (such as economics or graphic design), the grouping of certificate courses is treated like all other courses and the student receives a diploma only. However, if the student wishes to receive both a diploma and a certificate, the higher standard for certificate courses (minimum 2.0 in each certificate course) will apply. Students must file a certificate completion petition separately in order to receive the certificate.

Change of Major

Students wishing to change majors within University College should file a Change of Major Petition with the Office of Academic and Student Affairs, 180 Ruggles. Petitions are available at all campus locations or by calling 617-437-2400 (voice), 617-437-2825 (TTY). Students who have received an associate's degree who are now working toward a bachelor's degree should be sure to change their majors to their new programs.

Changes in Requirements

The continuing development of University College requires frequent revisions. When no undue and unusual hardship is imposed on students because of these changes, students are expected to meet the requirements of the most current *Bulletin*. If a particular student finds it impossible to meet those requirements, the *Bulletin* for the year in which he or she declared a major is binding. University College makes every effort to inform students who are admitted to a degree program when there are changes in the curriculum.

Academic programs, course content, and rules and regulations are subject to change without notice.

Course Substitutions

Students may request to replace a required course in an academic program with another comparable course. Although such requests are not encouraged, the University recognizes that students may occasionally have very good reasons for requesting such substitutions. Students must complete a Petition for

Course Substitutions and submit it to the Office of Academic and Student Affairs. Petitions are available at each campus location or by calling 617-437-2400 (voice), 617-437-2825 (TTY). Petitions are routinely forwarded to the appropriate program director. The program director reviews the request and notifies the student of the outcome. A copy of the completed request is kept in the student's file in the Office of Academic and Student Affairs.

Dean's List

All degree candidates who have taken a minimum of 18 quarter hours during the fall, winter, spring, and summer quarters, and who have completed this coursework with a quality-point average of 3.25 or better with no "I" grades, grades below C-, and no pass-fail grades (except where there is no alternative or where required by the program) are placed on the Dean's List. These students receive certificates of commendation from the Dean of University College after the summer quarter has ended. See page 21 for information on graduation with honor.

In Absentia Status

If a student moves beyond a reasonable commuting distance from University College or its branch campuses and has completed one hundred thirty-five or more quarter hours of credit (at least 75 q.h. of which must have been taken at University College), the Committee on Academic Standing will consider a petition to allow the student to complete his or her requirements for a University College degree at another approved college. The remaining courses must be completed within two years of the date of official *in absentia* status approval. The student must submit course descriptions to the Committee for approval prior to taking the courses.

Special Studies

Qualified students may have the opportunity to take up to six special studies. Those who meet the specifications described below may take a combination of:

- two advanced tutorials
- one field work
- three independent studies or
- three honors programs

Petitions for these studies are available in the Program Offices, located on the second floor of Ruggles Building. Petitions should be

filed at least six weeks prior to the quarter in which the special study is to be taken.

Most special studies are taken under the direction of a faculty adviser who will meet with the student at least three times during the quarter, and will be available for frequent phone conferences. The language and lab tutorials will meet weekly. Students *may* request a specific faculty member, however, no special study may proceed without the Program Director's approval.

Special studies are not offered in all subject areas. To find out if they are offered in your area of interest, check the course descriptions for your program in this *Bulletin*.

Before petitioning for a special study you may wish to consult with your program office. In many cases, taking a full course will be of greater value to you.

Advanced Tutorial: The Advanced Tutorial was designed primarily for students with declared majors who have been unable to take a needed upper level course in the usual format because the course has not been available for two consecutive years. The Advanced Tutorial is essentially a full course taken independently under the tutelage of a faculty adviser who will provide a syllabus, test the student's progress, and ascribe a grade. With the exception of languages and a few labs, Advanced Tutorials are 3 q.h. credits each.

Students may take no more than two Advanced Tutorials and should have completed 87 q.h. before petitioning.

Field Work: Field work courses are designed to enhance career development by allowing students to earn credit for the application of their academic backgrounds to practical problems in the work place. Field work courses are offered for qualified Business students and Liberal Arts majors. Please refer to individual course descriptions for details, including prerequisites.

A student must have a 3.0 cumulative average to be eligible and may take only one quarter of field work for 6 q.h. credits. Each student shall make his or her own arrangements for doing field work at an approved work site, and shall spend a minimum of fifteen hours per week at the site, whether on a paid or volunteer basis.

Each student shall meet with a departmental field work adviser no fewer than three

times per quarter: once to plan the project, once to discuss the student's progress, and once to present and discuss a final written report. The student's grade shall be dependent upon the quality of the experience as demonstrated by reports, work products, and other documentation and upon discussions between the U.C. faculty adviser and the work site supervisor.

Independent Study: The Independent Study, is an opportunity for degree students who have completed 96 q.h. and maintained a 3.0 q.p.a. to undertake special research, reading, or experimental study projects in areas related to their major. In addition to filing a petition, interested students should submit a study proposal for the Program Director's approval. The proposal should include a detailed outline of the objectives and plan of study, and should be accompanied by a supporting statement from the faculty member under whose direction the study will take place. Students may take up to three Independent Studies at 3 q.h. each. Usually these courses would count toward major elective requirements.

Honors Program : The Honors Program is similar to the Independent Study, with two exceptions: the student must have a 3.5 q.p.a. to be eligible, and submit a more in depth work product to earn the additional 1 q.h. credit.

Students may take up to three Honors Courses at 4 q.h. each. Usually these courses would count toward major elective requirements.

Please Note: Students may not take more than three of either independent studies or honors.

Status Reports

The Office of Academic and Student Affairs provides status reports for students who want to know where they stand in a particular academic program. Status Report Request forms are available at all campus locations and by calling 617-437-2400 (voice), 617-437-2825 (TTY).

No more than one status report for the same program will be issued to a student in a given academic year. Generally requests are held to be processed in either February or August. The Office of Academic and Student Affairs will issue status reports at the time of request under the following circumstances:

- when issuing a transfer credit award;
- when the request is for a senior status report;
- when the curriculum changes in an academic program;
- when the student has been away from University College for a period of time and has noted this on the request form; or
- when the student is changing majors and has noted this on the request form.

Transfer Credit Policies and Procedures

Students may transfer credit from accredited institutions of higher education when courses completed are applicable to the student's program in University College. The minimum course grade acceptable for transfer credit is C, or 2.0 on a four-point scale. The total amount of transfer credit that may be awarded may not exceed 128 quarter hours. Courses for which transfer credit has been awarded may not be repeated at University College without a reduction in the transfer credit award. An accredited institution of higher education is an institution having recognition and membership in one of the six regional accrediting associations recognized by the Council on Post-Secondary Accreditation.

Transfer Credit Procedure

Students who would like to obtain an evaluation of credits earned from another institution must file a Transfer Credit Petition with the Office of Academic and Student Affairs. The student must then write to the registrar of the institution previously attended and request that an official transcript (one bearing that institution's seal) be forwarded to the Office of Academic and Student Affairs, University College, 180 Ruggles, Northeastern University, 360 Huntington Avenue, Boston, MA 02115. Upon receipt of official transcripts, the Office of Academic and Student Affairs issues an evaluation of all credits as they apply to the student's program in University College. Students should allow at least three weeks for processing transfer credit petitions from the point when all transcripts have been received. Since the process of evaluating transfer credit is complex, students should not expect evaluations of their transcripts during

advising appointments. Official awarding of credit is recorded on the student's University College transcript when admission to a degree program is approved. Students who wish to be admitted to a degree program may indicate this on the transfer credit petition and should attach proof of high school graduation (official high school transcript, or notarized copy of diploma or GED certificate). Please see page 14 for admissions requirements.

Validation of Required Upper-Level Business Courses for Transfer Credit

It may be necessary for students entering the Bachelor of Science in Business Administration (BSBA) degree program to validate required upper-level business courses that they have taken outside the framework of the program.

The Bachelor of Science in Business Administration degree programs offered by University College conform to all standards established by the American Assembly of Collegiate Schools of Business (AACSB). AACSB has been recognized by the Council for Post-Secondary Accreditation and by the United States Office of Education as the sole accrediting organization for university bachelor's and master's degree programs in business administration.

Validation is the set of procedures that tests whether an upper-level course completed at the lower division of a bachelor's degree program should be accepted for transfer credit in the upper division of a bachelor's degree program recognized and approved by the AACSB.

In general, students are able to validate previously earned course credits by taking a sequential course in a reserved section, a department-approved examination, or a CLEP (College Level Examination Program) or PEP (Proficiency Examination Program) examination.

For more information on course validation, see page 56. Students should talk with a University College academic adviser for information about the validation of upper-level business courses for transfer credit.

Evaluation of International Educational Credentials

United States citizens and international students with Resident Alien status who have international high school or college credentials must file an International Educational

Credentials Form and pay a \$45.00 evaluation fee. An evaluation for purposes of admission and/or transfer credit is issued by the Office of Academic and Student Affairs. Requirements include completion of an interview and receipt of the completed form, official copies of all transcripts translated into English and a check or bank draft for \$45.00 payable to Northeastern University. The official assessment of international educational credentials is made in accordance with current standards for awarding transfer credit at University College or as recommended by the Center for International Higher Education Documentation.

International students with non-immigrant status must file an International Student Application (see page 12 International Students) and will have any transfer credit evaluated as part of that process.

Course(s) at Another College or University

Students who are admitted to a degree program at University College and want to complete one or more courses at another institution for transfer purposes must first file a petition to enroll in such courses and provide course descriptions to the Office of Academic and Student Affairs. Courses taken at other institutions may be disallowed unless a petition has been submitted and approved *in advance*. Students may not take courses at any other institution during their senior year for the purpose of transferring credit. See the section on Residence Requirement on page 21.

Credit by Examination

University College awards credit by examination, provided the examination does not duplicate previously earned academic credit. Credit is granted for successful completion of examinations currently available through the College Level Examination Program (CLEP) of the College Entrance Examination Board and through the Proficiency Examination Program (PEP) of the American College Testing Program. Both programs have been designed to help students obtain college-level credit for knowledge acquired through non-traditional means, such as on-the-job training; educational television; or correspondence, extension, or independent study. University College defines a passing score as 500 on General Examinations and 50 on Subject Examinations. Information about these programs is available from the Office of Academic and

Student Affairs at University College and from the Northeastern University Counseling and Testing Center.

Modern Language Proficiency Examination

Students may be eligible to receive credit for proficiency in a modern language. Examinations are currently offered in French, Spanish, German, and Italian. Students should contact the Liberal Arts Program office, telephone 617-437-2416, for more information or an application form.

Assessment of Prior Learning (APL)

Some students may petition for prior learning credit, which is available *only for liberal arts courses*. See page 121 for details.

Prior learning credit is not available for business courses, except through CLEP or PEP examinations. (See Credit by Examination, previous page.)

Credit cannot be awarded through APL when an appropriate examination is available through CLEP or PEP.

Credit for Extra-institutional Learning

Extra-institutional learning is learning that takes place outside the sponsorship of legally authorized and accredited post-secondary educational institutions. The term applies to learning acquired from formal courses sponsored by associations, governments, business, and industry.

In awarding credit for extra-institutional learning, University College uses the *National Guide to Credit Recommendations for Noncollegiate Courses*, published by the American Council on Education.

Students applying for credit for extra-institutional learning must submit a Transfer Credit Petition and provide official credentials from the sponsoring noneducational organization to the Office of Academic and Student Affairs. The credit may be applied toward degree requirements at University College if recommended in the *National Guide*, provided credit is not otherwise obtainable through CLEP or PEP. (See Credit by Examination.)

Grading System Policies and Procedures

Grading System

A student's work in each course is evaluated by the instructor, who awards a letter grade at the end of the quarter. This grade is officially recorded by the Registrar's Office. The grades and symbols used are given below, together with the numerical equivalents used for computing quality-point averages:

A	(4.000)
A-	(3.667)
B+	(3.333)
B	(3.000)
B-	(2.667)
C+	(2.333)
C	(2.000)
C-	(1.667)
D+	(1.333)
D	(1.000)
D-	(.667)
F	(0)
I	Incomplete
L	Audit (no credit)
S	Satisfactory (pass/fail grade)
U	Unsatisfactory (pass/fail grade)
X	Incomplete (pass/fail grade)
*	Grade not received

Change of Grade Policy

The period for clearing an "I" grade is restricted to one calendar year from the end of the quarter in which the course was originally taken. "I" grades outstanding for twelve months or longer shall remain permanently on all records.

Beginning with grades recorded at the end of Fall Quarter 1986, the period for changing any grade is restricted to one calendar year from the end of the quarter in which the course was taken.

Requests for exceptions to this policy must be made to the University College Academic Standing Committee, 180 Ruggles.

Grade Reports and Transcripts

All efforts are made to mail grades prior to the beginning of the following quarter. A supplementary grade report is issued when a missing grade or a grade change is received. University regulations prohibit issuing grades by telephone. Grade reports of degree candidates indicate both their quarterly quality-point average and their cumulative quality-point average. Problems with grades not received (*) or grade changes that have not been posted on transcripts should be addressed to the Program Office that administers the course.

Students may obtain a transcript of their grades by making a request *in writing* to the Registrar's Office, 117 Hayden Hall, Northeastern University, Boston, MA 02115. Unofficial transcripts are issued free of charge; official transcripts bearing the University seal cost \$2.

Incomplete ("I") Grades

The "I" grade, or incomplete, may be given only when the student fails to complete a major requirement of a course, such as a term paper or a final exam, but has been in regular attendance. Students who have missed a substantial number of class meetings without the instructor's permission receive a grade of "W". An instructor may decide that a student has done so poorly in the course that even a perfect grade in a make-up final examination could not raise the grade from "F"; in this case "F" is the proper grade, regardless of the missed final examination.

All deficiencies must be made up in the manner prescribed by the instructor no later than twelve months following the recording of the "I" grade. Students requesting an exception to this policy must petition the University College Academic Standing Committee in writing. To remove an "I" grade, the instructor must file a change of grade form with the program office, to indicate the grade that the student is to receive. A student who elects to make up an "I" grade by taking the same course over again will be given a new grade and will be billed accordingly. The original "I" grade will remain on the student's record.

Missed Final Examinations

Students who miss a final examination are given a grade of "I" (incomplete) unless the student has done so poorly in the course that even a perfect grade on a make-up final could

not raise the grade from "F", in which case an "F" shall be given as the proper grade. Students do not automatically have the right to make up a missed final examination. Students must petition for this privilege and pay a fee of \$50 for each make-up examination. Petitions are available at each campus location or by calling 617-437-2425. Students are notified whether or not their petitions have been approved prior to the date of the make-up examination.

Students who make up a missed final examination will have the appropriate letter or pass/fail grade substituted for the "I" grade on their transcripts.

Pass/Fail Grades

Satisfactory completion of work in all courses taken on a pass/fail basis is designated on the transcript by the letter "S". Unsatisfactory work is designated on the transcript by the letter "U". Any unsatisfactory grade must be handled according to the existing policy of University College but may never be cleared by enrolling in the same course on the basis of the pass/fail system of grading.

An incomplete in a course taken on a pass/fail basis is designated by the letter "X" on the transcript and is treated according to the normal procedure for grades of incomplete.

Please see also Pass/Fail Courses on page 13.

Quality-Point Average

To obtain the quality-point average, the numerical equivalent of each grade received is multiplied by the credit hours earned, the quality points are added together, and the total quality-points are divided by the student's total quarter hours. An example follows:

Grade Achieved	Numerical Equivalent	Credit Hours	Quality Points
A	4.000	3	12.0
B-	2.667	3	8.0
C	2.000	6	12.0
F	0.000	3	0.0

$$\text{Quality-Point Average} = \frac{\text{Total Quality Points (32.0)}}{\text{Total Credit Hours (15)}} = 2.13$$

The quality-point average is equal to the total quality points (in this case 32.0) divided by the total credit hours (15), which comes to an average of 2.13.

Pass/fail grades (S, U, and X), incompletes (I), and audits (L) are not included in the

quality-point average. Similarly, transfer credits are not included in quality-point averages. However, the total earned hours appearing on the student's transcript include both transfer credits and "S" grades.

A cumulative quality-point average below 2.0 is unacceptable and does not allow a student to continue in University College or to receive a degree from Northeastern University. The "F" grade is a failure and requires repetition of the course in its entirety.

Graduation Policies and Procedures

Residence Requirement

Every candidate for the bachelor's or associate's degree must fulfill the minimum residence requirement, which is defined as the satisfactory completion of at least forty-five quarter hours of course work for the bachelor's degree, or twenty-four quarter hours of course work for the associate's degree, in University College *immediately preceding graduation*. At least twelve of the forty-five quarter hours, or six of the twenty-four, must be in the candidate's major field of study.

Because of this residence requirement, students may not take courses at any other institution during their senior year for the purpose of transferring credit.

Students whose enrollment in a degree program is interrupted for a period of one year or more will be reinstated in that program or a comparable program at the time of re-entry into University College.

Graduation Requirements

Except for certain health professions programs, the requirement for graduation from University College is 174 quarter hours for a bachelor's degree and 96 quarter hours for an associate's degree, with attainment of an overall quality-point average of 2.0 (C). In addition, the student must have a 2.0 average in the major concentration courses. Although the credits allowed for acceptable work completed elsewhere by transfer students count toward fulfillment of quantitative graduation requirements, neither the credits nor the grades earned in such courses are included in the quality-point computations for graduation. Course requirements for each degree are outlined in this *Bulletin*.

Graduation with Honor

Graduation with honor is reserved for bachelor's degree candidates who have completed a minimum of 72 quarter hours of work at University College and who have demonstrated distinctly superior academic achievement as evidenced by the following quality-point averages:

Graduation with Honor	3.00 to 3.49
Graduation with High Honor	3.50 to 3.74
Graduation with Highest Honor	3.75 to 4.00

Courses transferred from another educational institution are not considered in determining honors.

Credit by Examination During the Senior Year

CLEP or PEP examinations (see page 18, 57) may be taken by students during their final year of study provided they have met the forty-five or twenty-four quarter-hour residence requirement for graduation described above. Because of the time it takes for CLEP and PEP examinations to be graded and returned to the University, students requesting June graduation must take their CLEP and PEP examinations no later than the winter quarter of their senior year, and students requesting September commencement must take their examinations no later than the spring term of their senior year.

Senior Status Procedure

Each student who intends to graduate during the current academic year must notify the Office of Academic and Student Affairs of his or her intention to graduate by filing for a senior status report.

Senior status reports are issued to assist students with selecting the courses they need to complete their program requirements. Seniors are encouraged to request their senior status reports during the summer prior to the academic year in which they plan to graduate. Petition forms are available at each campus location or by calling 617-437-2400 (voice) or 617-437-2825 (TTY). At this time, seniors are also encouraged to clear up missing grades, incompletes, transfer credit, admissions, or other problems.

Once a Senior Status Report has been completed, the Office of Academic and Student Affairs mails the student a Commencement

Data Card, which the student *must* return by the date specified on the card to be guaranteed inclusion on the official graduation list.

Academic Audit of Seniors

The Office of Academic and Student Affairs conducts an academic audit of all seniors approximately one month prior to graduation. During this audit, academic problems such as incompletes or missing grades are noted. Every effort is made to relay this information to the student through mail and telephone contact. If these problems remain unresolved, seniors are notified by certified mail that they have failed to qualify for their degree.

Commencement Ceremony

Information concerning commencement is mailed to all seniors who have returned a

Commencement Data Card (see Senior Status, page 21) during the spring term, for June graduation, or the summer term, for September graduation.

Attendance at Commencement for all University College degree candidates is optional. Students who do not attend Commencement should receive their diplomas by mail approximately six to eight weeks after the ceremony.

Students must have cleared all academic, financial, and/or disciplinary deficiencies in order to graduate. Students who have questions about the commencement ceremony should direct them to the Commencement Office, 617-437-3190.

Programs of Study

Overview

At University College, your options are almost unlimited. Our programs of study can take you in any direction you determine toward the fulfillment of your professional or personal objectives. You may enroll as a student pursuing a degree program or as a nondegree student taking a single course or a special program.

Our programs leading to the Bachelor of Science, Bachelor of Science in Business Administration, and Bachelor of Arts degrees provide opportunities for cultural and professional development equivalent in quality and scope to those offered in the conventional four-year college enrolling full-time students. The bachelor's degree requires 174 quarter hours of credit or more.

Programs leading to the Associate in Science degree enable students to establish a knowledge base in business administration, criminal justice and security, health professions and sciences, or liberal arts. The associate's degree requires 96 quarter hours of credit and is equivalent to the conventional two-year, or junior community college program in scope and quality. University College also offers certificate programs in a wide range of disciplines.

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Course descriptions are listed in alphabetical order by subject area beginning on page 149.

Certificate Programs

University College offers a variety of certificate programs designed to meet the needs of individuals who seek specific, job-related skills rather than the traditional course sequence of a degree program. Students enrolling in our certificate programs include

- individuals who plan to complete an associate's degree but first want to acquire the marketable skills offered in a certificate program;
- individuals who seek intensive study in a discipline but who do not wish to acquire a degree; and
- individuals who already hold a degree but wish to acquire specialized knowledge for a career change or professional development.

Students entering a certificate program should file a certificate petition with the Office of Academic and Student Affairs. When they have completed all coursework toward their certificates, they should file again. Petitions are available from the Office of Academic and Student Affairs, 180 Ruggles Building, 617-437-2400, and at all campus locations.

For assistance in determining course prerequisites or in deciding on the appropriate program, call 617-437-2400 for an appointment with an academic adviser, or call the number listed for each individual certificate program.

Most certificate programs are designed to facilitate transfer into a related degree program. In addition, a limited amount of transfer credit for introductory courses taken at another school may be applied toward certificate program requirements. The number of transfer credits permitted varies by certificate but is usually limited to 9 quarter hours.

A student may be awarded only two certificates. Students who choose to complete a second certificate in a subject related to the first may find that the two have certain courses in common. However, a second certificate will not be awarded if more than 50 percent of the course work is duplicated.

On occasion, students have good reasons for requesting permission to replace a required course with a substitute course. Permission to substitute a course must be granted by the appropriate program office. Students should submit a completed Petition for Course Substitutions to the appropriate office. Petitions are available at all campus locations.

Beginning with courses taken Fall term 1987, students must achieve a grade of C (2.0) or better in each course in order to receive a certificate.

Accounting Certificate Program



				quarter hours
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
ACC 4301	ACC 4302	ACC 4303	Intermediate Accounting 1, 2, 3*	9
ACC 4310	or	ACC 4410	Cost Accounting 1	3
FI 4301	or	FI 4401	Principles of Finance	3
Total Quarter Hours (Possible transfer credit: 9 quarter hours)				24

For more information, call 617-437-2418.

*Or students may select ACC 4401, ACC 4402 and ACC 4403.

Acting Certificate Program



				quarter hours
DRA 4101			Introduction to Theatre	3
DRA 4140	DRA 4141		Introduction to Acting 1, 2	6
DRA 4151			Acting for the Camera	3
DRA 4152			Acting for Commercials	3
DRA 4153			Acting for Voice Overs	3
DRA 4250			Theatre Movement	3
DRA 4260			Theatre Speech	3
Total Quarter Hours (Possible transfer credit: 9 quarter hours)				24

For more information, call 617-437-2416 or 617-437-2423.

Advertising Certificate Program



				quarter hours
JRN 4112			Writing for Media 1	3
JRN 4349			Advertising Basics	3
JRN 4350			Advertising Copywriting	3
JRN 4351			Advertising Practice	3
ART 4115			Graphic Design for Non-Majors	3
ART 4143			Advertising Design	3
MTH 4520			Statistical Thinking	3
MKT 4301	or	MKT 4401	Introduction to Marketing 1	3
<i>Choose one elective.</i>				
MKT 4302	or	MKT 4402	Introduction to Marketing 2	(3)
MKT 4310	or	MKT 4410	Advertising Management 1	(3)
JRN 4300			Photojournalism	(3)
ART 4160			Basic Photography	(3)
MGT 4101			Introduction to Business and Management 1	(3)
Total Quarter Hours (Possible transfer credit: 9 quarter hours)				27

For more information, call 617-437-2416 or 617-437-2423.



American Sign Language and Deaf Studies Certificate Program

Explore the language and culture of the American deaf community. This program introduces signing, gives the student the chance to practice communicating with the hearing-impaired, and helps the student build needed confidence.

			quarter hours
ASL 4101	ASL 4102	American Sign Language 1, 2*	8
ASL 4201	ASL 4202	Intermediate American Sign Language 1, 2	8
ASL 4301	ASL 4302	Advanced American Sign Language Proficiency 1, 2	8
ASL 4412		American Deaf Culture	3
ASL 4410		Linguistics of American Sign Language	3
ASL 4411		Deaf History	(3)
or		or	
ASL 4413		American Sign Language Literature	(3)

Total Quarter Hours (Possible transfer credit for ASL 4101 and ASL 4102:

8 quarter hours; all other credits must be completed in residence; a 3.0 cumulative grade-point average is required to receive this certificate.)

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*An Advanced Placement examination is available for this course. If ASL 4101 or ASL 4102 is waived, a substitution must be made so that the quarter hours earned still total 33.

For more information, call 617-437-3064 (voice) or 617-437-3067 (TTY).



Biomedical Illustration Certificate Program

			quarter hours
ART 4121		Principles of Drawing and Composition	3
ART 4122		Introduction to Figure Drawing	3
ART 4123		Drawing Workshop	3
BIO 4175		Anatomy and Physiology 1	3
BIO 4374		Histology 1	3
BIO 4420		Biomedical Illustration	4
BIO 4441		Parasitology	4
BIO 4801		Independent Study in Biology	4
<i>Recommended</i>			
ART 4112		Visual Foundation	(3)
ART 4140		Graphic Communication and Production	(3)
BIO 4375	BIO 4376	Histology 2, 3	(6)

Total Quarter Hours (Possible transfer credit: 9 quarter hours)

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For more information call 617-437-2818.

Business Administration Certificate Program



				quarter hours
ACC 4101			Accounting Principles 1	3
ECN 4115			Economic Principles and Problems 1	3
FI 4301	or	FI 4401	Principles of Finance	3
HRM 4301	or	HRM 4401	Organizational Behavior	3
MIS 4101			Introduction to Data Processing and Information Systems 1	3
MKT 4301	or	MKT 4401	Introduction to Marketing 1	3
MGT 4101	MGT 4102		Introduction to Business and Management 1, 2	6
or			or	
MGT 4105			Introduction to Business and Management Intensive (may be taken in lieu of MGT 4101 and 4102)	(6)
MGT 4323			Management and Leadership	3
SPC 4101			Fundamentals of Human Communication	3
Total Quarter Hours (Possible transfer credit: 9 quarter hours)				30

For more information, call 617-437-2418.

Business Communication Certificate Program



				quarter hours
JRN 4335			Public Relations Basics	3
MGT 4101			Introduction to Business and Management 1	3
SPC 4102			Group Discussion	3
SPC 4152			Interviewing	3
SPC 4153			Techniques of Persuasion	3
SPC 4154			Negotiation Skills	3
SPC 4155			Organizational Communication	3
SPC 4251			Business and Professional Speaking	3
<i>Choose one writing course,</i>				
ENG 4380			Business Writing and Reports	(3)
JRN 4112			Writing for Media 1	(3)
TCC 4101			Technical Writing 1	(3)

or choose any acceptable substitute in written communication, with prior approval of the department consultant or program director.

Total Quarter Hours (Possible transfer credit: 9 quarter hours) **27**

For more information call 617-437-2416 or 617-437-2423.

Career Transition Certificate Program

People interested in planning a change in employment — either re-entry into the workforce or advancement in their career are invited to participate in a new certificate program at University College. The program, Career Transition, is designed to assist students in making the shift in career life by integrating academic theory, work experience, and personal growth through seminars.

The program offers students completing designated business certificate programs the opportunity to gain experience by doing supervised field work. The program is

outlined below. An explanation of field work can be found on page 16 of this *Bulletin*.

Specialized support seminars are available to students in this certificate program. For this reason it is essential that you complete a certificate petition for this program prior to beginning your studies. (Petitions are available at the Boston campus in room 180 Ruggles Building and at all branch locations.)

Students who have already completed certificates in Accounting, Computer Programming, Finance, Marketing, or Purchasing are not eligible for this program.

Career Transition Certificate Program



		quarter hours
INT 4110	Self-Assessment and Career Development	3
Business Certificate Program: Accounting, Computer Programming, Finance, Marketing, or Purchasing		24-30 credits
MGT 4323	Management and Leadership	3
ACC, MIS, MKT, PUR, or FI 4900	Field Work	6
2 Seminars (No cost to student)		0
Total Quarter Hours (possible transfer credit: 9 quarter hours)		36 to 42 credits

For more information call 617-437-2418.

Compensation and Benefits Management Certificate Program



		quarter hours
HRM 4310	HRM 4311	Personnel Management 1, 2*
HRM 4321		Wage and Salary Administration
HRM 4322		Employee Benefits
HRM 4323		Job Evaluation
HRM 4330	HRM 4332	Employment Rights 1, 2*
		Elective in Human Resources Management
Total Quarter Hours (Possible transfer credit: 9 quarter hours)		24

For more information, call 617-437-2418.

*This certificate may be taken by students who have also completed the Human Resources Management Certificate. Asterisked courses do not have to be repeated.

Computer Programming and Systems Analysis Certificate Program



				quarter hours
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
MIS 4221	MIS 4222	MIS 4223	COBOL Programming 1, 2, 3	9
MIS 4230			PC Software for Professionals	3
MIS 4241	MIS 4242		Programming in BASIC 1, 2	6
MIS 4301	or	MIS 4401	Structured Systems Analysis and Design 1	3
MIS 4302	or	MIS 4402	Structured Systems Analysis and Design 2	3
Total Quarter Hours (Possible transfer credit: 9 quarter hours)				30

This certificate differs from the Computer Systems Specialist Program (described below) in that the courses for this certificate are regularly offered at all campuses and may be completed over a longer period of time than in the Specialist Program. For more information about both programs, call 617-437-2418.

Computer Systems Specialist Program

The Program

This program is designed to offer students training as computer systems specialists. Intended for students who are interested in entry-level programming positions in business and industry, the program addresses the career goals of individuals who have little or no academic or work-related background in computer programming. Students who successfully complete the program receive a Computer Systems Specialist certificate.

Admission

Computer Systems Specialist Program candidates will be evaluated for acceptance into the program on the basis of their transcripts from high school or most recently attended college, motivation, and expressed goals. Enrollment is limited. This program is offered only if a sufficient number of qualified candidates apply.

Time and Place

The program is scheduled twice during the academic year, in the fall and spring quarters. Classes are scheduled for thirty weekends: Friday, 6 to 10 p.m., and all day Saturday, 9 a.m. to 5:30 p.m. Sections are offered at the Burlington campus.

Academic Credit and Certification

Upon satisfactory completion of the program, students will have accumulated forty-five quarter hours of academic credit, and will receive the program certificate. The credits represent 26 percent of the credits necessary for a bachelor's degree.

Placement Assistance

Although job placement is not guaranteed, most students who successfully complete the program find suitable employment. Placement services include individual counseling; job-search seminars on career opportunities, self-assessment, resume preparation, and interviewing skills; and resume referrals to employers.

For More Information

For more information about the program and an application form, contact the Business Administration Programs Office, Northeastern University, University College, 360 Huntington Avenue, Boston, Massachusetts 02115, telephone 617-437-2418.



Computer Systems Specialist Program

			quarter hours	
MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6	
MGT 4101	MGT 4102	Introduction to Business and Management 1, 2	6	
MIS 4221	MIS 4222	MIS 4223	COBOL Programming 1, 2, 3	9
MIS 4235		Advanced COBOL Programming	3	
MIS 4236		Advanced PC Software	3	
MIS 4241		Programming in BASIC 1	3	
MIS 4273		PC DOS and Assembly	3	
MIS 4301	MIS 4302	Structured Systems Analysis and Design 1, 2	6	
MIS 4307		Communications and Networking	3	
MIS 4345*		Database Management Systems	3	
Total Quarter Hours			45	

* For course description see MIS 4445.

Computer Graphic Design Certificate Program

This program addresses the needs of both novice and professional designers seeking to pursue careers in the area of electronic graphic design. While the core curriculum is structured with little or no computer experience

an alternative curriculum affords professional designers, subject to approval of the Program Director, the opportunity of substituting up to three basic design courses with more advanced design or computer electives.

Some courses will be offered only on the Boston campus. Up to nine hours of APL (Assessment of Prior Learning) credit can be applied to the certificate.



Computer Graphic Design Certificate Program

			quarter hours
ART 4135		Design Foundations and Techniques*	3
ART 4140		Graphic Communication and Production	3
ART 4151		Typography	3
ART 4141	ART 4142	Graphic Design 1*, 2*	6
ART 4181		Introduction to Computer-Aided Graphic Design *	3
ART 4182		Computer Graphic Design Workshop*	3
ART 4183		Electronic Publishing Design*	3
ART 4184		Business Presentation Graphics	3
ART 4185		Creative Imaging: Custom Computer Design	3
ART 4186		Computer Graphic Design Portfolio	3

Recommended

ART 4187	ART 4188	ART 4189	Graphic Software Studies 1, 2, 3	(9)
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Total Quarter Hours (possible transfer credit: 9 quarter hours)

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For more information, call 617-437-2416 or 617-437-2423.

*3 ½-hour studio.

Culinary Arts (Chef's Institute) Certificate Program



		quarter hours
HTL 4307	Food Service Engineering and Sanitation	3
HTL 4308	Food and Beverage Cost Control	3
HTL 4320	Food Preparation Intensive	6
HTL 4322	Consumer Food Preparation	3
HTL 4324	Dining Room Beverage Operation and Preparation	3
HTL 4325	Intensive Chef's Training	6
HTL 4326	The Joy of Catering	6
Total Quarter Hours (Possible transfer credit: 9 quarter hours)		30

For more information, call 617-437-2418.



Electronic Composition Certificate Program

		quarter hours
ART 4140	Graphic Communication and Production	3
ART 4115	Graphic Design for Non-Majors*	3
ART 4139	Color Theory and Practice	3
ART 4151	Typography	3
ART 4431	Graphic Composition Systems 1*	3
ART 4181	Introduction to Computer-Aided Graphic Design*	3
ART 4410	Electronic Imaging Systems	3
ART 4415	Electronic Document Production*	3
ART 4366	Promotional and Technical Publications Design and Production	3
ART 4416	Style Set-up for Electronic Document Production	3
Total Quarter Hours (Possible transfer credit: 9 quarter hours)		30

*Studio Courses

For more information, call 617-437-2416 or 617-437-2423.



Entrepreneurship and Small Business Certificate Program

				quarter hours
ACC 4101			Principles of Accounting	3
MKT 4301	or	MKT 4401	Introduction to Marketing	3
MKT 4310	or	MKT 4410	Advertising Management 1	3
BL 4101			Business Law 1	3
HRM 4301	or	HRM 4401	Organizational Behavior	3
MGT 4328			Creating New Ventures	3
MGT 4329			Managing Small Businesses	3
MGT 4340*	MGT 4341*		Small Business 1, 2*	6
Total Quarter Hours (Possible transfer credit: 9 quarter hours)				27

For more information call 617-437-2418.

*Must be taken as last 2 courses of certificate, and cannot be transferred into program.



Finance Certificate Program

				quarter hours
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
FI 4301	or	FI 4401	Principles of Finance	3
FI 4302	or	FI 4402	Financial Management	3
FI 4310	or	FI 4410	Investment Principles	3
FI 4320	or	FI 4420	Credit Principles	3
FI 4325	or	FI 4425	Budgeting and Planning	3
Total Quarter Hours (Possible transfer credit: 9 quarter hours)				24

For more information, call 617-437-2418.



Food Service Management Certificate Program

				quarter hours
ACC 4101			Accounting Principles 1	3
HTL 4301			Introduction to Hotel and Restaurant Management	3
HTL 4304			Hotel and Restaurant Law	3
HTL 4307			Food Service Engineering and Sanitation	3
HTL 4308			Food and Beverage Cost Control	3
HTL 4309			Managerial Accounting for the Hospitality Industry	3
HTL 4320			Food Preparation (Intensive)	6
Total Quarter Hours (Possible transfer credit: 9 quarter hours)				24

For more information, call 617-437-2418.

Gerontology Certificate Program*



		Choice of quarter hours or CEUs
SOC 4225/SOC 5225	Social Gerontology	3
PSY 4242/PSY 5242	Development: Adulthood and Aging	3
SOC 4226/SOC 5226	Work, Leisure, and Aging	3
PSY 4243/PSY 5243	Aging and Mental Health	3
ECN 4312/ECN 5312	Economic Concerns of Older Adults	3
PHL 4220/PHL 5220	The Meaning of Death	3
POL 4375/POL 5375	Consumer Advocacy 1	3
SOC 4240/SOC 5240	Sociology of Human Service Organizations	3
HSC 4610/HSC 5610	Geriatric Nutrition	3
Total Quarter Hours (Possible transfer credit: 9 quarter hours)		27

For more information, call 617-437-2416 or 617-437-2423.

*Course numbers that begin with "4" are for credit, course numbers that begin with "5" are for Continuing Education Units (CEUs).

Graphic Design and Visual Communication Certificate Program



		quarter hours
ART 4140	Graphic Communication and Production	3
ART 4135	Design Foundations and Techniques*	3
ART 4139	Color Theory and Practice	3
ART 4151	Typography	3
ART 4367	Illustration	3
JRN 4349	Advertising Basics	3
ART 4141 ART 4142	Graphic Design 1*, 2*	6
ART 4143	Advertising Design*	3
ART 4251	Advanced Graphic Design*	3

Total Quarter Hours (Possible transfer credit: 9 quarter hours; possible APL credit: 9 quarter hours. See p. 19)

30

For more information, call 617-437-2416 or 617-437-2423.

*3 ½-hour studio.



Hotel and Restaurant Management Certificate Program

		quarter hours
HTL 4301	Introduction to Hotel and Restaurant Management	3
HTL 4303	Front Office Management	3
HTL 4304	Hotel and Restaurant Law	3
HTL 4307	Food Service Engineering and Sanitation	3
HTL 4308	Food and Beverage Cost Control	3
HTL 4309	Managerial Accounting for the Hospitality Industry	3
HTL 4313	Introduction to Tourism	3
HTL 4320	Food Preparation Intensive	6
Total Quarter Hours (Possible transfer credit: 9 quarter hours)		27

For more information, call 617-437-2418.



Human Resources Management Certificate Program†

				quarter hours
HRM 4301	or	HRM 4401	Organizational Behavior	3
HRM 4302	or	HRM 4402	Introduction to Human Resources Management	3
HRM 4303	or	HRM 4403	Applied Human Resources Management	3
HRM 4310	HRM 4311		Personnel Management 1, 2*	6
HRM 4330	HRM 4332		Employment Rights 1, 2*	6
HRM 4340			Public and Private Sector Collective Bargaining in the United States	3
HRM 4325			Training and Development in Organizations	3
Total Quarter Hours (Possible transfer credit: 9 quarter hours)				27

For more information, call 617-437-2418.

†This certificate may also be taken by students who have completed the Compensation and Benefits Management certificate.

*Courses with asterisks do not have to be repeated.

Interpersonal/Family Communication Certificate Program



		quarter hours
SPC 4101	Fundamentals of Human Communication	3
SPC 4221	Interpersonal Communications 1	3
SPC 4225	Family Communication	3
<i>Choose three.</i>		
SPC 4150	Self-Concept and Communication	(3)
SPC 4151	Listening	(3)
SPC 4240	Managing Interpersonal Conflict	(3)
SPC 4231	Female/Male Communication 1	(3)
<i>Choose one.</i>		
PSY 4272	Personality	(3)
PSY 4240	Development: Infancy and Childhood	(3)
PSY 4241	Development: Adolescence	(3)
PSY 4242	Development: Adulthood and Aging	(3)
<i>Choose one.</i>		
SOC 4155	Sociology of the Family	(3)
SOC 4156	Violence in the Family	(3)
REC 4304	Dynamics of Family Life for the Disabled	(3)
<i>Choose one.</i>		
PHL 4170	The Human Search for Meaning	(3)
PSY 4280	Human Sexuality and Love	(3)
Total Quarter Hours (Possible transfer credit: 9 quarter hours)		27

For more information, call 617-437-2416 or 617-437-2423.

Law and Criminal Justice Certificate Program



Core Courses		quarter hours
CJ 4101	Administration of Justice	3
CJ 4108 CJ 4109	Criminal Law and Procedure 1, 2	6
CJ 4110	Constitutional Law	3
CJ 4511	Survey of Criminal Evidence	3
Total Quarter Hours (Possible transfer credit: 6 quarter hours)		15

For more information, call 617-437-2425.



Learning Disability Specialization Program

		quarter hours
REC 4102	Principles and Practices of Therapeutic Recreation	3
REC 4200	Introduction to Learning Disabilities	3
REC 4210	Psychosocial Aspects of Disabilities and Illness	3
REC 4250	Assessment of Learning Disabilities	3
REC 4304	Dynamics of Family Life for the Disabled	3
REC 4350	Legal Issues of Disability and Rehabilitation	3
REC 4450	Vocational Planning for the Learning Disabled	3
REC 4470	The Learning Disabled at Work	3
Total Quarter Hours (Possible transfer credit: 9 quarter hours)		24

For more information, call George Ransom, at 617-437-3167 or 437-3153.



Management Certificate Program

			quarter hours	
HRM 4301	or	HRM 4401	Organizational Behavior	3
MIS 4101			Introduction to Data Processing and Information Systems 1	3
MGT 4101	MGT 4102		Introduction to Business and Management 1, 2	6
or			or	
MGT 4105			Introduction to Business and Management Intensive	(6)
MGT 4320			Managing Change	3
MGT 4323			Management and Leadership	3
MGT 4330			Essentials for Managers of Small Business	3
or			or	
MGT 4329			Managing Small Businesses	(3)
Elective				3
Total Quarter Hours (Possible transfer credit: 9 quarter hours)				24

For more information, call 617-437-2418.



Marketing Certificate Program

				quarter hours
MKT 4301	or	MKT 4401	Introduction to Marketing 1	3
MKT 4302	or	MKT 4402	Introduction to Marketing 2	3
MKT 4310	or	MKT 4410	Advertising Management 1	3
MKT 4315	or	MKT 4415	Sales Management 1	3
MKT 4320	MKT 4321 or	MKT 4420	Marketing Management 1, 2	6
MKT 4330	or	MKT 4430	Marketing Research 1	3
MKT 4307			Telemarketing Management	3

Total Quarter Hours (Possible transfer credit: 9 quarter hours) **24**

For more information, call 617-437-2418.



Music Therapy Certificate Program

			quarter hours
MUS 4100		Introduction to Music	3
MUS 4160		Music Therapy	3
MUS 4163		Sound Health: Music and Relaxation	3
PSY 4110		Introduction to Psychology— Fundamental Issues	3
SOC 4100		Roles, Culture, and the Individual	3
REC 4200		Introduction to Learning Disabilities	3
SPC 4101		Fundamentals of Human Communication	3

Choose one:

MUS 4200	How to Read and Write Music	(3)
MUS 4201	Music Theory 1	(3)

Choose one instrument course:

MUS 4241	Piano Class	(3)
MUS 4244	Voice Class	(3)
MUS 4247	Guitar Class	(3)

Choose one psychology or sociology course:

PSY 4111	Introduction to Psychology— Developmental Aspects	(3)
PSY 4112	Introduction to Psychology— Personal Dynamics	(3)
SOC 4101	Inequality and Institutions	(3)
SOC 4102	Institutions and Social Change	(3)

Total Quarter Hours (Possible transfer credit: 9 quarter hours) **30**

For more information, call 617-437-2416 or 617-437-2423.

Operations Management Certificate Program



			quarter hours	
IM 4301	or	IM 4401	Introduction to Operations Management	3
IM 4302			Operations Analysis	3
IM 4314			Productivity Enhancement and Quality Management	3
IM 4317			Purchasing and Materials Management	3
IM 4321			Operations Planning and Control	3
IM 4326			Operations Management Policy	3
MS 4332			Statistical Quality Control	3
Total Quarter Hours (Possible transfer credit: 9 quarter hours)				21

For more information, call 617-437-2418.

Policing Certificate Program



Core Courses			quarter hours
CJ 4105		Computer Applications in Criminal Justice	3
CJ 4108	CJ 4109	Criminal Law and Procedure 1, 2	6
CJ 4201	CJ 4202	Criminal Investigation 1, 2	6
CJ 4205	CJ 4206	Patrol Theory and Administration 1, 2	6
CJ 4211		Police and Social Problems	3
CJ 4213		Police Discretion	3
CJ 4212		Police Community Relations	3
Total Quarter Hours (Possible transfer credit: 9 quarter hours)			30

For more information, call 617-437-2425.



Professional Parenting Certificate Program

		quarter hours
REC 4105	Childhood Medical Procedures	2
REC 4118	Coping Skills for Child Rearing	2
REC 4215	Causes/Detection of Child Abuse	3
REC 4250	Assessment of Learning Disabilities	3
REC 4378 REC 4379	Parenting Skills 1, 2	6
or	or	
REC 4380	Parenting Skills Intensive	(6)
PSY 4240	Development: Infancy and Childhood	3
PSY 4241	Development: Adolescence	3
SPC 4225	Family Communication	3
<i>Select one course from the following:</i>		
REC 4210	Psychosocial Aspects of Illness and Disability	(3)
REC 4304	Family Dynamics for the Disabled	(3)
REC 4425	Mental Illness/Mental Retardation	(3)
REC 4460	Process of Aging	(3)
Total Quarter Hours (possible transfer credit: 9 quarter hours)		28

For more information, please call George Ransom at 617-437-3167.



Public Relations Certificate Program

		quarter hours
JRN 4112 JRN 4113	Writing for Media 1, 2	6
JRN 4335	Public Relations Basics	3
JRN 4336	Public Relations Practices	3
JRN 4337	Public Relations Problems	3
JRN 4480	Copy Editing	3
MTH 4520	Statistical Thinking	3
SPC 4153	Techniques of Persuasion	3
<i>Choose one elective.</i>		
JRN 4300	Photojournalism	(3)
MGT 4101	Introduction to Business and Management 1	(3)
MKT 4301 or MKT 4401	Introduction to Marketing 1	(3)
ART 4368	Graphic Design for Media	(3)
Total Quarter Hours (Possible transfer credit: 9 quarter hours)		27

For more information, call 617-437-2416 or 617-437-2423.



Purchasing and Materials Management Certificate Program

			quarter hours
ACC 4101	ACC 4102	Accounting Principles 1, 2	6
MGT 4101		Introduction to Business and Management 1	3
PUR 4351	PUR 4352	Purchasing 1, 2	6
PUR 4357		Business Negotiations	3
PUR 4358		Materials Requirement Planning	3
PUR 4365		Production Activity Control	3
PUR 4370		Inventory Management	3
TRN 4305		Traffic Management	3
Total Quarter Hours (Possible transfer credit: 9 quarter hours)			30

For more information, call 617-437-2418.

Quick-Start Certificate Program

The Program

This fall students will be able to enter a week-end program which will allow them to earn 45 quarter hours of credit toward an associate's degree. The program will run on Friday evenings and Saturdays.

Admission

College Board Examinations are not required for admission. For purposes of evaluation for admission, however, high-school transcripts and personal recommendations are required.

Enrollment is limited. The program will be offered only if a sufficient number of qualified candidates apply.

Academic Credit and Certification

Upon satisfactory completion of the program, students will have accumulated 45 quarter hours of academic credit. The credits represent 47 percent of the credits necessary for an associate's degree.

Time and Place

Classes are scheduled for thirty weekends: Friday, 6 to 10 p.m. and all day Saturday, 9 a.m. to 5:30 p.m. The Quick-Start Program will be offered at the Burlington campus.

For More Information

For further information about the program and an application form, contact the Business Administration Programs Office, Northeastern University, University College, 360 Huntington Avenue, Boston, MA 02115, 617-437-2418.

The program includes the following courses:

ENG 4110	ENG 4111	Critical Writing 1, 2	6
ENG 4112		Approaches to Literature	3
ACC 4101	ACC 4102	Accounting Principles 1, 2	6
BL 4101	BL 4102	Business Law 1, 2	6
FI 4301		Principles of Finance	3
IRM 4301		Organizational Behavior	3
IRM 4302		Introduction to Human Resources Mgt.	3
MGT 4101	MGT 4102	Introduction to Business and Mgt. 1, 2	6
MIS 4101	MIS 4102	Introduction to Data Processing 1, 2	6
MKT 4301		Introduction to Marketing 1	3
Total Quarter Hours			45

Real Estate Certificate Program



			quarter hours
RE 4301	RE 4302	Real Estate Fundamentals 1, 2	6
RE 4323	RE 4324	Real Estate Appraisal 1, 2	6
RE 4328	RE 4329	Real Estate Financial Analysis 1, 2	6
RE 4341	RE 4342	Real Estate Law 1, 2	6
Total Quarter Hours (Possible transfer credit: 9 quarter hours)			24

For more information, call 617-437-2418.

Security Administration Certificate Program



			quarter hours
CJ 4403		Introduction to Security	3
CJ 4405		Current Security Problems	3
CJ 4406	CJ 4407	Security Administration 1, 2	6
CJ 4408		Legal Aspects of Security Management and Operations	3
CJ 4701		Independent Study 1	3
Criminal justice and security electives			6
Total Quarter Hours (Possible transfer credit: 9 quarter hours)			24

For more information, call 617-437-2425.

Security Technology Certificate Program



			quarter hours
CJ 4403		Introduction to Security	3
CJ 4404		Industrial Safety and Fire Prevention	3
CJ 4408		Legal Aspects of Security Management and Operations	3
CJ 4409	CJ 4110	Physical Security Methods and Technology 1, 2	6
CJ 4411		Electronic Information Security	3
Criminal justice and security electives			6
Total Quarter Hours (Possible transfer credit: 9 quarter hours)			24

For more information, call 617-437-2425.

Small Business Program

The Small Business program is designed to help the entrepreneur, small business manager, or prospective small business owner formulate an effective business plan.

Students in the program must complete the two consecutive courses over two academic quarters. Each course carries three quarter hours of credit, and neither may be taken as a business elective.

Admission

There are no admission requirements to the first course, but first-time admission to the program at the beginning of the second course is not allowed.

Scheduling

The program is usually scheduled to begin in the fall quarter at the main Boston campus and in the winter quarter at the Burlington campus, and runs for two consecutive quarters. The number of sections and locations that are offered varies according to demand.

Small Business Program

		quarter hours
MGT 4340	Small Business 1	3
MGT 4341	Small Business 2	3
Total Quarter Hours		6

For more information, call 617-437-2418.



Speech Communication Certificate Program

		quarter hours
SPC 4101	Fundamentals of Human Communication	3
SPC 4102	Group Discussion	3
SPC 4150	Self-Concept and Communication	3
SPC 4111	Voice and Articulation	3
SPC 4151	Listening	3
SPC 4152	Interviewing	3
SPC 4153	Techniques of Persuasion	3
SPC 4154	Negotiation Skills	3
SPC 4251	Business and Professional Speaking	3
Total Quarter Hours (Possible transfer credit: 9 quarter hours)		27

For more information, call 617-437-2416 or 617-437-2423.



Technical Writing Certificate Program

			quarter hours
ART 4140		Graphic Communication and Production	3
MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6
TCC 4101	TCC 4102	Technical Writing 1, 2	6
TCC 4105		Editing for Science and Technology	3
TCC 4301	TCC 4302	Computer Software Technical Writing 1, 2	6
<i>Choose one computer language.</i>			
MIS 4221		Cobol Programming 1	(3)
or		or	
MIS 4240		Introduction to Programming in BASIC	(3)
or		or	
MIS 4250		FORTTRAN Programming 1	(3)
or		or	
MIS 4270		Pascal Programming 1	(3)
Total Quarter Hours (Possible transfer credit: 9 quarter hours)			27

For more information, call 617-437-2416 or 617-437-2423.

Transition to Higher Education Certificate Program

This certificate program was developed for people who are taking courses at the college level for the first time and who are experiencing some apprehension about their academic abilities. The program is designed to help develop basic skills in math, writing, and computer literacy. It may assist you in planning a program of study, increasing your self awareness and self-esteem, and improving communications with others. Lastly, the program may help you to see how you fit into the organization in which you may work.

Most students come to Northeastern University to prepare for, or to advance their

careers. This program emphasizes skills which are essential ingredients not only for academic success but also for career mobility in today's market.

Specialized support services are available to students in this certificate program. For this reason, it is essential that you complete a certificate petition for this program prior to beginning your studies. (Petitions are available at the Boston Campus in room 180 Ruggles Building and at all branch locations.) When we receive your application for the program, we will send you information containing a recommended sequence of study and support services.

Transition to Higher Education Certificate Program

quarter hours

INT 4110	Self Assessment and Career Development	3
ED 4050	College Reading & Study Skills	3
ENG 4011	Elements of Writing	3
ENG 4012	Elements of Grammar	3
MTH 4001	Introduction to Mathematics	3
PSY 4242	Development: Adulthood and Aging	3
HRM 4301	Organizational Behavior	3
COM 4101	Computer Literacy	4

Choose one communications course:

SPC 4101	Fundamentals of Human Communications	(3)
SPC 4150	Self Concept and Communication	(3)
SPC 4155	Organizational Communication	(3)

Total Quarter Hours **28**

Transportation and Physical Distribution Management Certificate

quarter hours

TRN 4301	TRN 4303	Elements of Transportation 1, 2	6
TRN 4302	TRN 4304	Physical Distribution Management 1, 2	6
MGT 4101		Introduction to Business and Management 1	3
Transportation electives			6

Total Quarter Hours (Possible transfer credit: 9 quarter hours) **21**

For more information, call 617-437-2418.

Writing Certificate Program

quarter hours

ENG 4349	ENG 4350	Expository and Persuasive Writing 1, 2	6
ENG 4352		Expository Communications	3
JRN 4112		Writing for Media 1	3
JRN 4113		Writing for Media 2	3
TCC 4101	TCC 4102	Technical Writing 1, 2	6
ENG 4356		Creative Writing	3
ENG 4363		Writing for the Marketplace	3

Total Quarter Hours (Possible transfer credit: 9 quarter hours) **27**

For more information, call 617-437-2416 or 617-437-2423.

Intermediate and Advanced Certificate Programs

University College offers several certificate programs designed to meet the needs of students who have already completed a substantial body of college work. These programs all have specific pre-requisites for entry and students should read the descriptive information provided to determine whether they are eligible.

Students wishing to enter one of these pro-

grams should file a petition with the Office of Academic and Student Affairs. If documentation of transfer credit is important for establishing that pre-requisites have been met, copies of college transcripts should be attached to the petition. Petitions are available from the Office of Academic and Student Affairs, 180 Ruggles Building, 617-437-2400, and at all campus locations.

All certificate policies stated on page 27 apply to Intermediate and Advanced Certificate Programs as well.

American Sign Language-English Interpreting Certificate Program

The Program

The American Sign Language-English Interpreting Certificate Program is designed to offer students education and training as sign language interpreters. Developed for students already proficient in American Sign Language and English, the nine courses in the program cover the theory and practice of interpreting. Students who are looking for entry-level staff positions or freelance assignments may find this program helpful. Students preparing for state quality assurance screening and national evaluation may also benefit from this program.

Admission

Candidates for admission must have received a B or better in Advanced American Sign Language Proficiency 2 (ASL 4302), or have

attained equivalent skills. Prospective students must complete an application process in which they demonstrate proficiency in English and American Sign Language as well as display an aptitude for tasks involved in the interpreting process. Previous experience in the deaf community is also highly recommended.

Certification

Students must complete all required course work and maintain an overall average of 3.0 or better in the program to attain the certificate.

For More Information

Applications and further information are available from the Sign Language Programs office, 276 Holmes Hall, Northeastern University, 360 Huntington Avenue, Boston, Massachusetts 02115, 617-437-3064 (voice); or 617-437-3067 (TTY).

American Sign Language—English Interpreting Certificate Program

Courses include the following.



				quarter hours
ASL 4600			Introduction to Interpreting	3
ASL 4601	ASL 4602	ASL 4603	American Sign Language Interpreting 1, 2, 3	12
ASL 4604	ASL 4605		Special Topics in Interpreting 1, 2	6
ASL 4606			Interpreter Roles and Ethics	3
ASL 4607			Interpreting Lab	4
ASL 4608			Practicum	4
Total Quarter Hours (Possible transfer credit: 8 quarter hours)				32

Advanced placement examinations are available for ASL 4202, ASL 4302, ASL 4412, and ASL 4410, which are prerequisites for courses for this certificate.

Executive Management Certificate Program

The Program

This program is designed for upper-level business students who have earned degrees already or who are majoring in areas other than management. Its intent is to provide a second dimension or specialization in management for the accounting, finance, marketing

or management information systems professionals.

This program is open only to students who have completed at least 80 quarter hours of college-level work, primarily in business subjects. As part of this 80 q.h. students must meet the prerequisites for each course as outlined in the individual course descriptions. Students enrolled in the University College BSBA Management degree are *not* eligible to receive this certificate.



Executive Management Certificate Program

			quarter hours
MGT 4410		Project Management Process: Planning and Implementation	3
MGT 4323		Management and Leadership	3
MGT 4450	MGT 4451	Business Policy 1, 2	6
MGT 4455		Manager and Society	3
MGT 4456		International Business Management and Operations	3
MGT 4460	MGT 4461	Management Seminar 1, 2	6
MKT 4420		Marketing Management 1	3
Total Quarter Hours (Possible transfer credit: 9 quarter hours)			27

For more information, call 617-437-2418.

International Business Certificate Program

The Program

This program is designed for students who have earned business degrees already or who are upper-level students currently majoring in business. Its intent is to provide a specializa-

tion in international business issues in addition to the major concentration.

This program is open only to students who have completed at least 80 q.h. of college-level work, primarily in business subjects. As part of this 80 q.h. students must meet the prerequisite for each course as outlined in the individual course descriptions.





International Business Certificate Program

		quarter hours
BL 4316	International Law	3
ECN 4334	Comparative Economic Systems	3
FI 4450	International Finance	3
HRM 4345	Comparative International Labor Relations Systems	3
MGT 4456	International Business	3
MGT 4357	Cultural Issues in International Business	3
MKT 4453	International Marketing	3
TRN 4350	International Transportation and Distribution Management	3
Total Quarter Hours (Possible transfer credit: 9 quarter hours)		24

For more information call 617-437-2418.

Professional Preparation Programs

Preparation for National Certification—APICS

The following courses are preparation for national exam certification leading to the title Certified Production and Inventory Control Manager (CPIM).

		quarter hours
PUR 4358	Materials Requirements Planning	3
PUR 4365	Production Activity Control	3
PUR 4370	Inventory Management	3
PUR 4390	Just-In-Time Manufacturing	3
PUR 4395	Master Production Scheduling	3
Total Quarter Hours		15

For more information, call 617-437-2418.

Preparation for National Certification—NAPM

The following courses prepare students to take the NAPM certification exams leading to Certified Purchasing Manager (C.P.M.). These courses may be applied toward the Purchasing and Materials Management Certificate and/or the associate's degree in Purchasing.

		quarter hours
PUR 4351	Purchasing 1	3
PUR 4352	Purchasing 2	3
Total Quarter Hours		6

For more information, call 617-437-2418.

Phlebotomy Certification Preparation

This program is geared toward students who want to enter the health field as well as to currently practicing phlebotomists who want to be certified. These courses are designed to prepare students for the national certification examination for medical laboratory personnel. Students should speak to the Medical Laboratory Coordinator prior to the start of the term to indicate their interest in the program.

		quarter hours
MLS 4104	Introduction to Phlebotomy	4
MLS 4108	Phlebotomy Applied Study	2
Total Quarter Hours		6

For more information, call the Medical Laboratory Coordinator at 617-437-3664.

Real Estate Broker or Salesperson Examination

The following courses cover the basic principles and terminology of real estate, and the practices of real estate brokerage, including appraisal, finance, development, management, and investment. Upon successful completion of these courses, students may take the Massachusetts real estate broker's or salesperson's examination.

		quarter hours
RE 4301	Real Estate Fundamentals 1	3
RE 4302	Real Estate Fundamentals 2	3
Total Quarter Hours		6

For more information, call 617-437-2418.

A Basic Program For Emergency Medical Technicians

This course is designed for those who wish to become certified EMTs as well as for those who just want to be prepared for emergencies. Students who successfully complete the course receive nine quarter hours of credit, a Northeastern University certificate, and a CPR certification from the American Heart Association. They also become eligible to take the state EMT licensing examination.

The EMT Basic course is offered at the Boston, Burlington, and Dedham campuses. Students spend 6 hours in class weekly for 12 weeks, 4 all-day Saturday exercises and 10 hours of in-hospital emergency room observation. There is a special tuition rate.

		quarter hours
EMS 4107	EMT-Basic	9
Total Quarter Hours		9

For more information call 617-272-5500.

Business Administration and Technology Degree Programs

Martha P. Welch, *Assistant Dean, Director, Business Administration Programs*

270 Ruggles Building
617-437-2418

Program Consultants

ACC: Accounting

Consultant:

Professor Paul A. Janell (College of Business Administration) (617-437-4645)

Associate Consultant (Accounting Principles):

Dean Walter E. Kearney, Jr. (College of Business Administration) (617-437-2312)

BL: Business Law

Consultant:

Thomas J. Ahern, Esq. (617-426-4211)

FI: Finance

Consultant:

Professor Jonathan Welch (College of Business Administration) (617-437-4572)

Associate Consultant:

Joseph Stanford (617-383-9299)

HTL: Hotel and Restaurant Management

Consultant:

Donald A. Witkoski (617-362-2131, x361)

HRM: Human Resources Management

Consultant:

Professor Brendan Bannister (College of Business Administration) (617-437-2503)

Associate Consultant:

Ronald E. Guittarr (508-475-4422)

IM: Industrial Management

Consultants:

Professor Robert A. Parsons (College of Business Administration) (617-437-4749)

Joel M. Rosenfeld (617-491-9200)

Associate Consultant:

James D. Mukjian (617-451-4004)

INT: Career/College Transition

Consultant:

Kathleen H. Hayes (617-437-4261)

MGT: Management

Consultant:

Professor Daniel McCarthy (College of Business Administration) (617-437-3255)

Associate Consultants:

W. Arthur Gagne (508-263-5819)

Robert L. Goldberg (617-267-6400)

MIS: Management Information Systems

Consultant:

Professor Victor Godin (College of Business Administration) (617-437-2418)

Associate Consultant (Systems):

James F. Ferreira (617-969-3100)

Associate Consultant (EDP):

Thomas M. Kelly (617-468-7900)

Associate Consultants (Programming):

Andrew E. Efsthathiou (617-727-6524)

Bennett L. Kramer (508-588-9100, x208)

Associate Consultant (Computer Systems

Specialist Programs)

Alan M. Tattle (617-595-3696)

MKT: Marketing

Consultant:

Professor Dan T. Dunn, Jr. (College of Business Administration) (617-437-4563)

Associate Consultant:

William T. Hadley (617-266-8400)

MS: Quality Control and Management Sciences

Consultant:

Professor Robert A. Parsons (College of Business Administration) (617-437-4749)

Associate Consultant:

William E. Grady (617-721-5770)

PUR: Purchasing

Consultant:

Stephen F. Armstrong (508-281-2000, x2519)

RE: Real Estate

Consultant:

Peter Flynn (617-233-2284)

TRN: Transportation and Physical Distribution Management

Consultant:

Professor James F. Molloy (College of Business Administration) (617-437-4812)

A Wide Variety of Options: Certificates and Degrees

Recognizing that adult students seek educational opportunities in business and related areas to satisfy many professional needs, University College offers a wide selection of business and technology courses as well as structured academic programs. Options include certificate programs, associate's degree programs, and bachelor's degree programs. All certificate and degree programs offer students an opportunity to achieve professional competence in a formal set of career-related subjects while laying the foundation for further professional growth.

Certificates in Business

Individuals can pursue a certificate program to build on or prepare for a new career, to qualify for a promotion, to stay current in a chosen field, or simply to acquire new skills and knowledge. Some individuals enroll in a certificate program as part of their traditional degree program. University College offers certificates in the following program areas:

Business Administration

- Accounting (page 28)
- Business Administration (page 30)
- Career Transition (page 31)
- Compensation and Benefits Management (page 31)
- Computer Programming and Systems Analysis (page 32)
- Computer Systems Specialist Program (page 32)
- Culinary Arts (Chef's Institute) (page 34)
- Entrepreneurship and Small Business (page 35)
- Executive Management (page 49)
- Finance (page 35)
- Food Service Management (page 35)
- International Business (page 49)
- Hotel and Restaurant Management (page 37)
- Human Resources Management (page 37)
- Management (page 39)
- Marketing (page 40)
- Purchasing and Materials Management (page 43)
- Quick Start (page 43)
- Real Estate (page 44)
- Small Business (page 45)

- Transition to Higher Education (page 47)
- Transportation and Physical Distribution Management (page 47)

Technology

- Electronic Composition (page 34)
- Operations Management (page 41)

Preparation for Certification (CPIM and C.P.M.)

Clusters of courses are being offered to prepare students for the national examinations leading to the titles of Certified Production and Inventory Control Manager (CPIM) and Certified Purchasing Manager (C.P.M.). See page 50 for details.

Career Transition Program

If you are interested in re-entering the job market or changing careers, we offer a new program this year called Career Transition Program, detailed on page 31.

Transition to Higher Education Certificate Program

If you are thinking of taking courses at the college level for the first time but are insecure about your academic abilities, consider this program. It may assist you in planning courses of study to develop basic skills in math, writing, and computer literacy. See page 51 for details.

Degree Programs

Associate in Science Degrees (AS)

Through a core of professional business courses and a well-balanced sequence of liberal arts courses, students in the Associate in Science degree program acquire specialized knowledge for future managerial growth.

To receive the associate's degree, a student must successfully complete the 96 quarter hours of course credit specified for the degree. Students who have completed a certificate program may then enroll in an associate's degree program. (Although credits earned in a

certificate program may be applied toward this degree, completion of a certificate program is not required.)

Students who wish to earn one of the Associate in Science degrees in business and have not earned 80 quarter hours of credit are required to enroll in the Open Business courses listed on page 57. Open Business courses include a required component that may be used for course validation in the Bachelor of Science in Business Administration (BSBA) degree programs.

Associate's degrees are offered in the following areas:

Business Administration

- Accounting (page 60)
- Business Administration (page 61)
- Finance (page 62)
- Hotel and Restaurant Management (page 63)
- Human Resources Management (page 64)
- Management Information Systems (page 66)
- Marketing (page 67)
- Purchasing and Materials Management (page 68)
- Real Estate (page 69)
- Transportation and Physical Distribution (page 70)

Technology

- Industrial Management (page 65)

Bachelor of Science in Business Administration (BSBA)

University College offers a Bachelor of Science in Business Administration degree with course concentrations in these areas:

- Accounting
- Finance
- Management
- Management Information Systems
- Marketing

The Bachelor of Science in Business Administration degree programs of University College are designed for men and women seeking to prepare themselves for managerial responsibility in business, government, and other organizations with the goal of developing the ability to recognize and solve problems and to understand the role of the

business firm in the community, the nation, and the world. In developing these skills, students have the opportunity to gain not only a broad understanding of business and organizational problems through specialized courses, but also through first-hand knowledge of effective teaching practitioners.

To ensure a well-rounded background that is so valuable in the business world, the college combines its business curriculum with courses from the sciences, humanities, and social sciences.

After the course-work foundation is completed, (See "Planning your Program of Study Toward a Bachelor of Science in Business Administration degree," p. 55) the various functional areas of business are emphasized and students concentrate their studies in specific areas. (Detailed descriptions of these areas follow this section.) In most of these upper-level courses, the traditional lecture-and-recitation format is supplemented by problem-solving and case-study methods where students analyze actual businesses and business problems and present recommendations for possible solutions. Students are encouraged to develop independent thinking, to support ideas with fact and logic, and to analyze and challenge propositions.

Upon completion of the Bachelor of Science in Business Administration degree, the graduate may choose to go on to pursue higher degrees. In general, students find that graduate schools view a Bachelor of Science degree in Business Administration as solid preparation for graduate work, not only in business but also in public administration, health-care administration, and educational administration. Law schools look favorably on the prelegal background obtained in business school. Although the Association of American Law Schools does not recommend particular courses or curricula for prelegal students, it does advise undergraduates to develop critical understanding of the institutions and values with which the law deals. Many careers in law are directly involved in the business world, either in large corporations or in private practice.

Accreditation by the American Assembly of Collegiate Schools of Business

University College's Bachelor of Science in Business Administration Degree is fully accredited by the American Assembly of Collegiate Schools of Business, indicating

that the programs meet the accrediting agency's standards for faculty and student quality, curriculum design, and overall University support.

Industrial Technology Bachelor of Science Degrees (BS) are offered in the following areas:

- Electronic Publishing Technology (page 76)
- Operations Technology (page 75)

The technology programs are designed to prepare the student to meet the challenge of interfacing technology and society. The technology student not only learns related disciplines but also becomes oriented in disciplines to which his or her technological skills will be applied.

Opportunities for Associate's Degree Graduates

Graduates of the engineering technology or science technology programs in Northeastern University's School of Engineering Technology, community colleges, or other similar colleges and institutions who have earned the Associate in Engineering or the Associate in Science degree, may transfer applicable credits toward the degree requirements of the baccalaureate programs in industrial technology.

Special Studies

University College offers a variety of Special Studies. These courses give students an opportunity to earn credits in Advanced Tutorials, Independent Studies, Honors Programs, and Field Work. Consult course descriptions on pages 16-17.

Planning Your Program of Study Toward a Bachelor of Science in Business Administration Degree

Students who plan to work toward the Bachelor of Science in Business Administration Degree should submit transcripts of

previously completed college-level course work and a Transfer Credit Petition to the Office of Academic and Student Affairs. (Transfer Credit Petitions may be requested by calling 617-437-2400. Petitions are also available at all campus locations.) Students will receive by mail a transfer credit evaluation and a suggested plan of study to prepare for admission to this program. When this paperwork has been completed, students are encouraged to schedule an appointment to discuss their programs with an academic adviser.

Students who do not have any academic courses that may be transferred from another educational institution or program should meet with an academic adviser early in their studies at University College. These students are required to complete 80 quarter hours of credit, including English courses ENG 4110, ENG 4111, and ENG 4112; mathematics courses MTH 4110 and MTH 4111; and a social science elective from the course list that follows. This course work must be completed prior to admission to the BSBA degree program.

Once students have met these requirements, they should complete a Petition for Admission to the Bachelor of Science in Business Administration Degree program and return it to the Office of Academic and Student Affairs to initiate the admissions process. This petition may be obtained at all campus locations or by calling 617-437-2400.

Admission to the BSBA Degree program is restricted to students who have maintained a 2.0 cumulative grade-point average and completed a minimum of 80 quarter hours of credit.

Students should choose their 80 quarter hours of credit from the course list that follows.

Recommended Lower-Level Courses

ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3
BL 4101	BL 4102		Law 1, 2
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3
ECN 4250	ECN 4251		Statistics 1, 2
ENG 4110	ENG 4111		Critical Writing 1, 2
ENG 4112			Approaches to Literature
ENG 4380	ENG 4381		Business Writing and Reports 1, 2
HST 4101			The Civilization of the Ancient and Medieval Worlds
HST 4102			The Civilization of the Early Modern World
or			or
HST 4103			The Civilization of the Modern World
MGT 4101	MGT 4102	MGT 4103	Introduction to Business and Management 1, 2, 3
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2
MS 4325			Business Decision Models
MTH 4110	MTH 4111		Math 1, 2
PHL 4100			Philosophical Thinking
PSY 4110			Introduction to Psychology: Fundamental Issues
PSY 4111			Introduction to Psychology: Developmental Aspects
or			or
PSY 4112			Introduction to Psychology: Personal Dynamics
SOC 4100			Roles, Cultures, and the Individual
SOC 4101			Inequality and Institutions
or			or
SOC 4102			Institutions and Social Change
SPC 4101			Fundamentals of Human Communication
3 quarter hours of a natural science elective			

Special Requirements for BSBA Degree Programs

Northeastern University is unique in the New England region in that both its full-time and part-time bachelor's degree business programs are accredited by the American Assembly of Collegiate Schools of Business (AACSB).

The following procedures assure that University College's BSBA programs conform to AACSB standards.

1. Reserved and Open Sections

Business courses in the BSBA programs are classified as *reserved* and *open*. Reserved courses are upper-level, some of which are mandatory for students who have enrolled in the BSBA degree program. To be qualified to

register for a reserved course, the student must have earned a total of 80 or more credits (including transfer credits). Reserved courses are offered at the Boston, Burlington, Dedham, Framingham, and Weymouth campuses. A student may register for an open course anytime, providing he or she has fulfilled the prerequisites.

2. Validation

Validation is the term used to describe procedures that test whether an open course completed at the lower division of a bachelor's program should be accepted for transfer credit in the upper division of an AACSB-approved bachelor's degree program. There are three approved validation methods:

- **Sequential Course.** Students who enroll in a Bachelor of Science in Business Administration Degree program can validate a course taken at University College or elsewhere by successfully completing a course that is sequential to the course already completed. The sequential course must be taken in a reserved section. For example, successful completion of *Cost Accounting 2* in a reserved course can validate *Cost Accounting 1*, regardless of where the student completed *Cost Accounting 1*.
- **College-Level Examination Program (CLEP) and/or Proficiency Examination Program (PEP).** These standard examinations can be used to validate some previously taken upper-level business courses.
- **Departmental Examination.** In cases where a sequential course does not exist or is not desired by a student, and no appropriate CLEP or PEP examination exists, validation can be accomplished through a departmental examination. Required upper-level courses are listed as follows under Reserved and Open Sections.

Open Business Courses

Open business courses are available on an open enrollment basis as long as the stated prerequisites are met and the student has earned under 80 quarter hours of credit. Open business courses are used to fulfill associate degree requirements. Candidates for the BSBA degree should enroll in reserved business courses; however, validated open business courses are transferrable into the BSBA degree program. See page 18.

ACC 4301	ACC 4302	ACC 4303	Intermediate Accounting 1, 2, 3
ACC 4310			Cost Accounting 1
FI 4301			Principles of Finance
FI 4302			Financial Management
FI 4310			Investment Principles
FI 4320			Credit Principles
FI 4325			Budgeting and Planning
HRM 4301			Organizational Behavior
HRM 4302			Introduction to Human Resources Management
HRM 4303			Applied Human Resources Management
IM 4301			Introduction to Operations Management
MIS 4301	MIS 4302		Structured Systems Analysis and Design 1, 2
MIS 4307			Communications and Networking
MKT 4301			Introduction to Marketing 1
MKT 4302			Introduction to Marketing 2
MKT 4310			Advertising Management 1
MKT 4315			Sales Management 1
MKT 4320			Marketing Management 1
MKT 4330			Marketing Research 1

Reserved Business Courses

The courses below are offered for students in the Bachelor of Science degree programs and for those students who have earned 80 quarter hours of credit. Appropriate course prerequisites are required.

ACC 4400			Accounting Informations Systems
ACC 4401	ACC 4402	ACC 4403	Intermediate Accounting 1, 2, 3
ACC 4404			Intermediate Accounting 4
ACC 4410			Cost Accounting 1
ACC 4411			Cost Accounting 2
ACC 4425	ACC 4426		Auditing 1, Auditing 2
ACC 4440	ACC 4441		Federal Income Taxes 1, 2
FI 4401			Principles of Finance
FI 4402			Financial Management
FI 4403			Financial Strategy
FI 4410			Investment Principles
FI 4411			Investment Management
FI 4420			Credit Principles
FI 4421			Credit Management
FI 4425			Budgeting and Planning
FI 4426			Financial Control
FI 4450			International Finance
HRM 4401			Organizational Behavior
HRM 4402			Introduction to Human Resources Management
HRM 4403			Applied Human Resources Management
IM 4401			Introduction to Operations Management
MGT 4410			Project Management Process: Planning and Implementation
MGT 4450	MGT 4451		Business Policy 1, 2
MGT 4455			Manager and Society
MGT 4456			International Business Management and Operations
MGT 4460	MGT 4461		Management Seminar 1, 2
MIS 4401	MIS 4402		Structured Systems Analysis and Design 1, 2

MIS 4407		Communications and Networking
MIS 4445		Database Management Systems
MIS 4448		Information Resource Management
MIS 4485		Applied MIS Development Project
MKT 4401	MKT 4402	Introduction to Marketing 1, 2
MKT 4410	MKT 4411	Advertising Management 1, 2
MKT 4415	MKT 4416	Sales Management 1, 2
MKT 4420		Marketing Management 1
MKT 4430	MKT 4431	Marketing Research 1, 2
MKT 4453		Competitive Strategy
MKT 4457		International Marketing

Accounting Associate in Science Degree (Major Code 470)



See also: Accounting Bachelor of Science in Business Administration Degree, page 71.

Core Courses

Liberal Arts

quarter hours

ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
MTH 4110	MTH 4111		Math 1, 2	6
ECN 4250	ECN 4251		Statistics 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	(3)
or			or	
PSY 4112			Introduction to Psychology: Personal Dynamics	(3)

Business Administration

BL 4101	BL 4102	Law 1, 2	6
MS 4325		Business Decision Models	3
FI 4301		Principles of Finance	3
HRM 4301		Organizational Behavior	3
HRM 4302		Introduction to Human Resources Management	3
MGT 4101	MGT 4102	Introduction to Business and Management 1, 2	6
MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6
MKT 4201		Introduction to Marketing 1	3

Major Concentration Courses

ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
ACC 4301	ACC 4302	ACC 4303	Intermediate Accounting 1, 2, 3	9
ACC 4310			Cost Accounting 1	3

Nonbusiness electives

6

Total Quarter Hours

96



Business Administration Associate in Science Degree (Major Code 401)

See also Management Bachelor of Science in Business Administration Degree, page 78.

Core Courses

Liberal Arts

quarter hours

ENG 4110	ENG 4111	Critical Writing 1, 2	6	
ENG 4112		Approaches to Literature	3	
MTH 4110	MTH 4111	Math 1, 2	6	
ECN 4250	ECN 4251	Statistics 1, 2	6	
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
PSY 4110		Introduction to Psychology: Fundamental Issues	3	
PSY 4111		Introduction to Psychology: Developmental Aspects	(3)	
or		or		
PSY 4112		Introduction to Psychology: Personal Dynamics	(3)	

Business Administration

MGT 4101	MGT 4102	MGT 4103	Introduction to Business and Management 1, 2, 3	9
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
MS 4325			Business Decision Models	3
HRM 4301			Organizational Behavior	3
HRM 4302			Introduction to Human Resources Management	3
HRM 4303			Applied Human Resources Management	3
FI 4301			Principles of Finance	3
MKT 4301			Introduction to Marketing 1	3

Electives

Nonbusiness electives	6
Open electives	12

Total Quarter Hours	96
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Finance Associate in Science Degree (Major Code 476)



See also: Finance Bachelor of Science in Business Administration Degree, page 73.

Core Courses

Liberal Arts

quarter hours

ENG 4110	ENG 4111	Critical Writing 1, 2	6	
ENG 4112		Approaches to Literature	3	
MTH 4110	MTH 4111	Math 1, 2	6	
ECN 4250	ECN 4251	Statistics 1, 2	6	
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
PSY 4110		Introduction to Psychology: Fundamental Issues	3	
PSY 4111		Introduction to Psychology: Developmental Aspects	(3)	
or		or		
PSY 4112		Introduction to Psychology: Personal Dynamics	(3)	

Business Administration

MGT 4101	MGT 4102		Introduction to Business and Management 1, 2	6
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
BL 4101	BL 4102		Law 1, 2	6
MS 4325			Business Decision Models	3
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
HRM 4301			Organizational Behavior	3
HRM 4302			Introduction to Human Resources Management	3
MKT 4301			Introduction to Marketing 1	3
<i>Choose one computer programming course from:</i>				
MIS 4221			COBOL Programming 1	(3)
or			or	
MIS 4241			Programming in BASIC 1	(3)
or			or	
MIS 4250			FORTRAN Programming 1	(3)

Major Concentration Courses

FI 4301	Principles of Finance	3
FI 4302	Financial Management	3
FI 4310	Investment Principles	3
FI 4320	Credit Principles	3
FI 4325	Budgeting and Planning	3

Electives

3

Total Quarter Hours

96

Hotel and Restaurant Management Associate in Science Degree (Major Code 472)



Core Courses

Liberal Arts

quarter hours

ENG 4110	ENG 4111	Critical Writing 1, 2	6
ENG 4112		Approaches to Literature	3
MTH 4110	MTH 4111	Math 1, 2	6
SPC 4101		Fundamentals of Human Communication	3
ECN 4115	ECN 4116	Economic Principles and Problems 1, 2	6
PSY 4110		Introduction to Psychology: Fundamental Issues	3
PSY 4111		Introduction to Psychology: Developmental Aspects	(3)
or		or	
PSY 4112		Introduction to Psychology: Personal Dynamics	(3)

Business Administration

MGT 4101	MGT 4102	Introduction to Business and Management 1, 2	6
ACC 4101	ACC 4102	Accounting Principles 1, 2	6
MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6
HRM 4301		Organizational Behavior	3
HRM 4302		Introduction to Human Resources Management	3
HRM 4303		Applied Human Resources Management	3

Major Concentration Courses

HTL 4301		Introduction to Hotel and Restaurant Management	3
HTL 4303		Front Office Management	3
HTL 4304		Hotel and Restaurant Law	3
HTL 4307		Food Service Engineering and Sanitation	3
HTL 4308		Food and Beverage Cost Control	3
HTL 4309		Managerial Accounting for the Hospitality Industry	3
HTL 4313		Introduction to Tourism	3
HTL 4320		Food Preparation Intensive	6

Electives 12

Total Quarter Hours 96

Human Resources Management Associate in Science Degree (Major Code 477)



Core Courses

Liberal Arts			quarter hours
ENG 4110	ENG 4111	Critical Writing 1, 2	6
ENG 4112		Approaches to Literature	3
MTH 4110	MTH 4111	Math 1, 2	6
ECN 4250	ECN 4251	Statistics 1, 2	6
ECN 4115	ECN 4116 ECN 4117	Economic Principles and Problems 1, 2, 3	9
PSY 4110		Introduction to Psychology: Fundamental Issues	3
PSY 4111		Introduction to Psychology: Developmental Aspects	(3)
or		or	
PSY 4112		Introduction to Psychology: Personal Dynamics	(3)

Business Administration

MGT 4101	MGT 4102	Introduction to Business and Management 1, 2	6
ACC 4101	ACC 4102	Accounting Principles 1, 2	6
MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6
MS 4325		Business Decision Models	3
BL 4101		Law 1	3
FI 4301		Principles of Finance	3
MKT 4301		Introduction to Marketing 1	3

Choose one computer programming course from:

MIS 4221	COBOL Programming 1	(3)
or	or	
MIS 4241	Programming in BASIC 1	(3)
or	or	
MIS 4250	FORTTRAN Programming 1	(3)

Major Concentration Courses

HRM 4301		Organizational Behavior	3
HRM 4302		Introduction to Human Resources Management	3
HRM 4303		Applied Human Resources Management	3
HRM 4310	HRM 4311	Personnel Management 1, 2	6
HRM 4330	HRM 4332	Employment Rights 1, 2	6
HRM 4340		Public and Private Sector Collective Bargaining	3

Nonbusiness electives

Total Quarter Hours

3

96



Industrial Management Associate in Science Degree (Major Code 478)

Core Courses

Liberal Arts			quarter hours	
ENG 4110	ENG 4111	Critical Writing 1, 2	6	
ENG 4112		Approaches to Literature	3	
MTH 4110	MTH 4111	Math 1, 2	6	
ECN 4250	ECN 4251	Statistics 1, 2	6	
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
MTH 4130	MTH 4131	Calculus for Nonengineers 1, 2	6	
PSY 4110		Introduction to Psychology: Fundamental Issues	3	
PSY 4111		Introduction to Psychology: Developmental Aspects	(3)	
or		or		
PSY 4112		Introduction to Psychology: Personal Dynamics	(3)	

Business Administration

MGT 4101	MGT 4102	Introduction to Business and Management 1, 2	6
ACC 4101	ACC 4102	Accounting Principles 1, 2	6
MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6
MS 4325		Business Decision Models	3
MS 4334		Statistical Quality Control	3
FI 4301		Principles of Finance	3
<i>Choose one computer programming course from:</i>			
MIS 4221		COBOL Programming 1	(1)
or		or	
MIS 4241		Programming in BASIC 1	(3)
or		or	
MIS 4250		FORTTRAN Programming 1	(3)

Major Concentration Courses

IM 4301	Introduction to Operations Management	3
IM 4302	Operations Analysis	3
IM 4314	Productivity Enhancement and Quality Management	3
IM 4317	Purchasing and Materials Management	3
IM 4321	Operations Planning and Control	3
IM 4326	Operations Management Policy	3

Electives	3
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Total Quarter Hours	96
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Management Information Systems

Associate in Science Degree (Major Code 475)



See also: Management Information Systems Bachelor of Science in Business Administration, page 80.

Core Courses

Liberal Arts			quarter hours	
ENG 4110	ENG 4111	Critical Writing 1, 2	6	
ENG 4112		Approaches to Literature	3	
MTH 4110	MTH 4111	Math 1, 2	6	
ECN 4250	ECN 4251	Statistics 1, 2	6	
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
SPC 4101		Fundamentals of Human Communication	3	

Business Administration

ACC 4101	ACC 4102	Accounting Principles 1, 2	6
MGT 4101	MGT 4102	Introduction to Business and Management 1, 2	6
MS 4325		Business Decision Models	3
FI 4301		Principles of Finance	3
HRM 4301		Organizational Behavior	3
HRM 4302		Introduction to Human Resources Management	3
HRM 4303		Applied Human Resources Management	3
IM 4301		Introduction to Operations Management	3

Major Concentration Courses

MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6
MIS 4221	MIS 4222	COBOL Programming 1, 2	6
MIS 4230		PC Software for Professionals	3
MIS 4236		Advanced PC Software	3
MIS 4301	MIS 4302	Structured Systems Analysis and Design 1, 2	6
MIS 4307		Communications and Networking	3

Electives	6
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Total Quarter Hours	96
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Marketing Associate in Science Degree (Major Code 479)



See also: Marketing Bachelor of Science in Business Administration Degree, page 82.

Core Courses

Liberal Arts			quarter hours	
ENG 4110	ENG 4111	Critical Writing 1, 2	6	
ENG 4112		Approaches to Literature	3	
MTH 4110	MTH 4111	Math 1, 2	6	
ECN 4250	ECN 4251	Statistics 1, 2	6	
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ENG 4380		Business Writing and Reports 1	3	
SPC 4101		Fundamentals of Human Communication	3	

Business Administration

MGT 4101	MGT 4102	Introduction to Business and Management 1, 2	6
ACC 4101	ACC 4102	Accounting Principles 1, 2	6
HRM 4301		Organizational Behavior	3
HRM 4302		Introduction to Human Resources Management	3
MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6
MS 4325		Business Decision Models	3
FI 4301		Principles of Finance	3

Major Concentration Courses

MKT 4301	MKT 4302	Introduction to Marketing 1, 2	6
MKT 4310		Advertising Management 1	3
MKT 4315		Sales Management 1	3
MKT 4320	MKT 4321	Marketing Management 1, 2	6
MKT 4330		Marketing Research 1	3
MKT 4307		Telemarketing Management	3

Nonbusiness electives 6

Total Quarter Hours 96

Purchasing and Materials Management Associate in Science Degree (Major Code 431)



Core Courses

Liberal Arts

quarter hours

ENG 4110	ENG 4111	Critical Writing 1, 2	6
ENG 4112		Approaches to Literature	3
MTH 4110	MTH 4111	Math 1, 2	6
ECN 4250	ECN 4251	Statistics 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3
			9

Business Administration

MGT 4101	MGT 4102	Introduction to Business and Management 1, 2	6
ACC 4101	ACC 4102	Accounting Principles 1, 2	6
MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6
HRM 4301		Organizational Behavior	3
HRM 4302		Introduction to Human Resources Management	3
MS 4325		Business Decision Models	3
IM 4301		Introduction to Operations Management	3
MKT 4301		Introduction to Marketing 1	3

Major Concentration Courses

PUR 4351	PUR 4352	Purchasing 1, 2	6
PUR 4357		Business Negotiations	3
PUR 4358		Materials Requirements Planning	3
PUR 4365		Production Activity Control	3
PUR 4370		Inventory Management	3
TRN 4305		Traffic Management	3

Nonbusiness electives

12

Total Quarter Hours

96

Real Estate Associate in Science Degree (Major Code 471)



Core Courses

Liberal Arts

quarter hours

ENG 4110	ENG 4111	Critical Writing 1, 2	6	
ENG 4112		Approaches to Literature	3	
MTH 4110	MTH 4111	Math 1, 2	6	
ECN 4250	ECN 4251	Statistics 1, 2	6	
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9

Business Administration

MGT 4101	MGT 4102	Introduction to Business and Management 1, 2	6
ACC 4101	ACC 4102	Accounting Principles 1, 2	6
FI 4301		Principles of Finance	3
HRM 4301		Organizational Behavior	3
HRM 4302		Introduction to Human Resources Management	3

Major Concentration Courses

RE 4301	RE 4302	Real Estate Fundamentals 1, 2	6
RE 4323	RE 4324	Real Estate Appraisal 1, 2	6
RE 4328	RE 4329	Real Estate Financial Analysis 1, 2	6
RE 4341	RE 4342	Real Estate Law 1, 2	6
		Real Estate Elective	3

Nonbusiness electives

18

Total Quarter Hours

96

Transportation and Physical Distribution Management Associate in Science Degree (Major Code 483)



Core Courses

Liberal Arts

quarter hours

ENG 4110	ENG 4111	Critical Writing 1, 2	6	
ENG 4112		Approaches to Literature	3	
MTH 4110	MTH 4111	Math 1, 2	6	
ECN 4250	ECN 4251	Statistics 1, 2	6	
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9

Business Administration

MGT 4101	MGT 4102	Introduction to Business and Management 1, 2	6
ACC 4101	ACC 4102	Accounting Principles 1, 2	6
MS 4325		Business Decision Models	3
FI 4301		Principles of Finance	3
HRM 4301		Organizational Behavior	3
HRM 4302		Introduction to Human Resources Management	3
IM 4301		Introduction to Operations Management	3
MKT 4301		Introduction to Marketing 1	3

Major Concentration Courses

TRN 4301	TRN 4303	Elements of Transportation 1, 2	6
TRN 4302	TRN 4304	Physical Distribution Management 1, 2	6

Electives

Transportation electives	6
Nonbusiness electives	18

Total Quarter Hours	96
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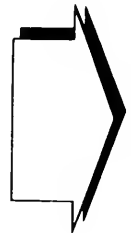
Accounting Bachelor of Science in Business Administration Degree (Major Code 460)



See also: Accounting Associate in Science Degree, page 60.

Liberal Arts			quarter hours	
ENG 4110	ENG 4111	Critical Writing 1, 2	6	
ENG 4112		Approaches to Literature	3	
MTH 4110	MTH 4111	Math 1, 2	6	
ECN 4250	ECN 4251	Statistics 1, 2	6	
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
PSY 4110		Introduction to Psychology: Fundamental Issues	3	
PSY 4111		Introduction to Psychology: Developmental Aspects	(3)	
or		or		
PSY 4112		Introduction to Psychology: Personal Dynamics	(3)	
ENG 4380	ENG 4381	Business Writing and Reports 1, 2	6	
SOC 4100		Roles, Culture, and the Individual	3	
SOC 4101		Inequality and Institutions	(3)	
or		or		
SOC 4102		Institutions and Social Roles	(3)	
SPC 4101		Fundamentals of Human Communication	3	
HST 4101		The Civilization of the Ancient and Medieval Worlds	3	
HST 4102		The Civilization of the Early Modern World	(3)	
or		or		
HST 4103		The Civilization of the Modern World	(3)	
PHL 4100		Philosophical Thinking	3	

continued on next page



Business Administration

ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
BL 4101	BL 4102		Law 1, 2	6
MGT 4101	MGT 4102		Introduction to Business and Management 1, 2	6
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
MS 4325			Business Decision Models	3
FI 4401	or	FI 4301	Principles of Finance	3
HRM 4401	or	HRM 4301	Organizational Behavior	3
HRM 4402	or	HRM 4302	Introduction to Human Resources Management	3
MKT 4401	or	MKT 4301	Introduction to Marketing 1	3
FI 4402	or	FI 4302	Financial Management	3
IM 4401	or	IM 4301	Introduction to Operations Management	3
MGT 4450	MGT 4451		Business Policy 1, 2	6
MGT 4456			International Business Management and Operations	3

Choose one computer programming course from:

MIS 4221		COBOL Programming 1	(3)
or		or	
MIS 4241		Programming in BASIC 1	(3)
or		or	
MIS 4250		FORTTRAN Programming 1	(3)

Major Concentration Courses

ACC 4401	ACC 4402	ACC 4403	Intermediate Accounting 1, 2, 3*	9
ACC 4404			Intermediate Accounting 4	3
ACC 4410	or	ACC 4310	Cost Accounting 1	3
ACC 4411			Cost Accounting 2	3
ACC 4425	ACC 4426		Auditing 1, 2	6
ACC 4440	ACC 4441		Federal Income Taxes 1, 2	6
ACC 4400			Accounting Information Systems	3

Electives

Natural science elective (BIO, CHM, or ESC)	3
Open electives	18

Total Quarter Hours**174**

*Students may select ACC 4301, ACC 4302, and ACC 4303.

Finance Bachelor of Science in Business Administration Degree (Major Code 433)



See also: Finance Associate in Science Degree, page 62.

Liberal Arts			quarter hours	
ENG 4110	ENG 4111	Critical Writing 1, 2	6	
ENG 4112		Approaches to Literature	3	
MTH 4110	MTH 4111	Math 1, 2	6	
ECN 4250	ECN 4251	Statistics 1, 2	6	
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
PSY 4110		Introduction to Psychology: Fundamental Issues	3	
PSY 4111		Introduction to Psychology: Developmental Aspects	(3)	
or		or		
PSY 4112		Introduction to Psychology: Personal Dynamics	(3)	
ENG 4380	ENG 4381	Business Writing and Reports 1, 2	6	
SOC 4100		Roles, Culture, and the Individual	3	
SOC 4101		Inequality and Institutions	(3)	
or		or		
SOC 4102		Institutions and Social Change	(3)	
SPC 4101		Fundamentals of Human Communication	3	
HST 4101		The Civilization of the Ancient and Medieval Worlds	3	
HST 4102		The Civilization of the Early Modern World	(3)	
or		or		
HST 4103		The Civilization of the Modern World	(3)	
PHL 4100		Philosophical Thinking	3	
Business Administration				
MGT 4101	MGT 4102	Introduction to Business and Management 1, 2	6	
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
BL 4101	BL 4102		Law 1, 2	6
MS 4325			Business Decision Models	3
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
HRM 4401	or	HRM 4301	Organizational Behavior	3
HRM 4402	or	HRM 4302	Introduction to Human Resources Management	3
MKT 4401	or	MKT 4301	Introduction to Marketing 1	3
IM 4401	or		Introduction to Operations Management	3

continued on the next page



MGT 4450	MGT 4451	Business Policy 1, 2	6
MGT 4456		International Business Management and Operations	3

Choose one computer programming course from:

MIS 4221		COBOL Programming 1	(3)
or		or	
MIS 4241		Programming in BASIC 1	(3)
or		or	
MIS 4250		FORTRAN Programming 1	(3)

Major Concentration Courses

FI 4401	or	FI 4301	Principles of Finance	3
FI 4402	or	FI 4302	Financial Management	3
FI 4403			Financial Strategy	3
FI 4410	or	FI 4310	Investment Principles	3
FI 4411			Investment Management	3
FI 4420	or	FI 4320	Credit Principles	3
FI 4421			Credit Management	3
FI 4425	or	FI 4325	Budgeting and Planning	3
FI 4426			Financial Control	3
FI 4450			International Finance	3

Electives

Natural science elective (BIO, CHM, or ESC)	3
Open electives	27

Total Quarter Hours	174
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Industrial Technology Bachelor of Science Degree (Major Code 490)

Operations Technology Concentration



Engineering or Technology Courses			quarter hours
(Must also include English courses ENG 4110, 4111, 4112, or equivalent)			96
Liberal Arts			
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 39
PSY 4110		Introduction to Psychology: Fundamental Issues3	
PSY 4111		Introduction to Psychology: Developmental Aspects(3)	
or PSY 4112		or Introduction to Psychology: Personal Dynamics(3)	
SOC 4100		Roles, Culture, and the Individual3	
SOC 4101		Inequality and Institutions(3)	
or SOC 4102		or Institutions and Social Change(3)	
Business Administration			
MGT 4101		Introduction to Business and Management 13	
ACC 4101	ACC 4102	Accounting Principles 1, 26	
BL 4101	BL 4102	Law 1, 26	
HRM 4301		Organizational Behavior3	
MIS 4101		Introduction to Data Processing and Information Systems 13	
MKT 4301		Introduction to Marketing 13	
MS 4332		Statistical Quality Control3	
Major Concentration Courses			
IM 4301		Introduction to Operations Management3	
IM 4302		Operations Analysis3	
IM 4314		Productivity Enhancement and Quality Management3	
IM 4317		Purchasing and Materials Management3	
IM 4321		Operations Planning and Control3	
IM 4326		Operations Management Policy3	
Nonbusiness electives			12
Total Quarter Hours			174

Industrial Technology Bachelor of Science Degree

Electronic Publishing Technology Concentration



Liberal Arts				quarter hours
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
ECN 4115	ECN 4116	ECN 4117	Economics Principles and Problems 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	(3)
or			or	
PSY 4112			Introduction to Psychology: Personal Dynamics	(3)
SOC 4100			Roles, Culture, and the Individual	3
SOC 4101			Inequality and Institutions	(3)
or			or	
SOC 4102			Institutions and Social Change	(3)
Business Administration				
ACC 4101	ACC 4102		Accounting Principles 1, 2	6
BL 4101	BL 4102		Law 1, 2	6
HRM 4301			Organizational Behavior	3
MGT 4101			Introduction to Business and Management 1	3
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems	6
MKT 4301			Introduction to Marketing 1	3
MS 4332			Statistical Quality Control	3
Technology Courses				
TCC 4101			Technical Writing 1	3
ECN 4250	ECN 4251		Statistics 1, 2	6
MIS 4301	MIS 4302		Structured Systems Analysis and Design 1, 2	6
IM 4301			Introduction to Operations Management	3
IM 4317			Purchasing and Materials Management	3
IM 4321			Operations Planning and Control	3
MTH 4110	MTH 4111	MTH 4112	Math 1, 2, 3	9
ART 4471			Quality Control in the Graphic Arts Industry	3
ART 4469			Operations Analysis in the Graphic Arts Industry	3
ART 4475			Graphic Arts Production Control	3

continued on the next page

ART 4479	Estimating Procedures for Graphic Arts	3
ART 4461	Applications of Electronic Publishing and Printing	3
ART 4443	Imaging Procedures and Systems 1	3
ART 4431	Graphic Composition Systems 1*	3
ART 4410	Electronic Imaging Systems	3
ART 4416	Style—Setup for Electronic Document Production*	3
Major Concentration Courses		
ART 4140	Graphic Communication and Production	3
ART 4115	Graphic Design for Non-Majors*	3
ART 4139	Color Theory and Practice	3
ART 4151	Typography	3
ART 4181	Introduction to Computer-Aided Graphic Design	3
ART 4415	Electronic Document Production*	3
ART 4366	Promotional and Technical Publications Design and Production*	3
Nonbusiness electives		33
Total Quarter Hours		174

*Studio Courses

Management Bachelor of Science in Business Administration Degree (Major Code 463)



See also Business Administration Associate in Science Degree, page 61.

Liberal Arts				quarter hours
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
MTH 4110	MTH 4111		Math 1, 2	6
ECN 4250	ECN 4251		Statistics 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	(3)
or			or	
PSY 4112			Introduction to Psychology: Personal Dynamics	(3)
ENG 4380	ENG 4381		Business Writing and Reports 1, 2	6
SOC 4100			Roles, Culture, and the Individual	3
SOC 4101			Inequality and Institutions	(3)
or			or	
SOC 4102			Institutions and Social Change	(3)
SPC 4101			Fundamentals of Human Communication	3
HST 4101			The Civilization of the Ancient and Medieval Worlds	3
HST 4102			The Civilization of the Early Modern World	(3)
or			or	
HST 4103			The Civilization of the Modern World	(3)
PHL 4100			Philosophical Thinking	3
Business Administration				
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
BL 4101	BL 4102		Law 1, 2	6
MGT 4101	MGT 4102	MGT 4103	Introduction to Business and Management 1, 2, 3	9
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
MS 4325			Business Decision Models	3
HRM 4401	or	HRM 4301	Organizational Behavior	3
HRM 4402	or	HRM 4302	Introduction to Human Resources Management	3

continued on the next page

HRM 4403	or	HRM 4303	Applied Human Resources Management	3
FI 4401	or	FI 4301	Principles of Finance	3
FI 4402	or	FI 4302	Financial Management	3
IM 4401	or	IM 4301	Introduction to Operations Management	3
MKT 4401	or	MKT 4301	Introduction to Marketing 1	3

Choose one computer programming course from:

MIS 4221		COBOL Programming 1	(3)
or		or	
MIS 4241		Programming in BASIC 1	(3)
or		or	
MIS 4250		FORTRAN Programming 1	(3)

Major Concentration Courses

MGT 4410			Project Management Process: Planning and Implementation	3
MGT 4450	MGT 4451		Business Policy 1, 2	6
MGT 4455			Manager and Society	3
MGT 4456			International Business Management and Operations	3
MGT 4460	MGT 4461		Management Seminar 1, 2	6
MKT 4420	or	MKT 4320	Marketing Management 1	3

Electives

Natural science elective (BIO, CHM, or ESC)	3
Open electives	30

Total Quarter Hours	174
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Management Information Systems Bachelor of Science in Business Administration Degree (Major Code 465)



See also Management Information Systems Associate in Science Degree, page 66.

Liberal Arts				quarter hours
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
MTH 4110	MTH 4111		Math 1, 2	6
ECN 4250	ECN 4251		Statistics 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
SPC 4101			Fundamentals of Human Communication	3
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	(3)
or			or	
PSY 4112			Introduction to Psychology: Personal Dynamics	(3)
ENG 4380	ENG 4381		Business Writing and Reports 1, 2	6
SOC 4100			Roles, Culture, and the Individual	3
SOC 4101			Inequality and Institutions	(3)
or			or	
SOC 4102			Institutions and Social Change	(3)
HST 4101			The Civilization of the Ancient and Medieval Worlds	3
HST 4102			The Civilization of the Early Modern World	(3)
or			or	
HST 4103			The Civilization of the Modern World	(3)
PHL 4100			Philosophical Thinking	3
Business Administration				
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
BL 4101	BL 4102		Law 1, 2	6
MGT 4101	MGT 4102		Introduction to Business and Management 1, 2	6

continued on the next page

MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6	
MIS 4221	MIS 4222	COBOL Programming 1, 2	6	
MIS 4230		PC Software for Professionals	(3)	
or		or		
MIS 4236		Advanced PC Software	(3)	
MS 4325		Business Decision Models	3	
FI 4401	or	FI 4301	Principles of Finance	3
FI 4402	or	FI 4302	Financial Management	3
HRM 4401	or	HRM 4301	Organizational Behavior	3
HRM 4402	or	HRM 4302	Introduction to Human Resources Management	3
HRM 4403	or	HRM 4303	Applied Human Resources Management	3
IM 4401	or	IM 4301	Introduction to Operations Management	3
MKT 4401	or	MKT 4301	Introduction to Marketing 1	3
MGT 4450	MGT 4451	Business Policy 1, 2	6	
MGT 4456		International Business Management and Operations	3	

Major Concentration Courses

MIS 4401	MIS 4402	Structured Systems Analysis and Design 1, 2*	6	
MIS 4407	or	MIS 4307	Communications and Networking	3
MIS 4445		Database Management Systems	3	
MIS 4448		Information Resource Management	3	
MIS 4485		Applied MIS Development Project	3	
MGT 4410		Project Management Process: Planning and Implementation	3	

Electives

Natural science elective (BIO, CHM, or ESC)	3
Open electives	21

Total Quarter Hours	174
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*Students may select MIS 4301 and MIS 4302.

Marketing Bachelor of Science in Business Administration Degree (Major Code 461)



See also: Marketing Associate in Science degree, page 67.

Liberal Arts				quarter hours
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
MTH 4110	MTH 4111		Math 1, 2	6
ECN 4250	ECN 4251		Statistics 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	(3)
or			or	
PSY 4112			Introduction to Psychology: Personal Dynamics	(3)
ENG 4380	ENG 4381		Business Writing and Reports 1, 2	6
SOC 4100			Roles, Culture, and the Individual	3
SOC 4101			Inequality and Institutions	(3)
or			or	
SOC 4102			Institutions and Social Change	(3)
SPC 4101			Fundamentals of Human Communication	3
HST 4101			The Civilization of the Ancient and Medieval Worlds	3
HST 4102			The Civilization of the Early Modern World	(3)
or			or	
HST 4103			The Civilization of the Modern World	(3)
PHL 4100			Philosophical Thinking	3
Business Administration				
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
BL 4101	BL 4102		Law 1, 2	6
MGT 4101	MGT 4102		Introduction to Business and Management 1, 2	6
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
MS 4325			Business Decision Models	3
FI 4401	or	FI 4301	Principles of Finance	3
FI 4402	or	FI 4302	Financial Management	3

continued on the next page

HRM 4401	or	HRM 4301	Organizational Behavior	3
HRM 4402	or	HRM 4302	Introduction to Human Resources Management	3
IM 4401	or	IM 4301	Introduction to Operations Management	3
MGT 4450	MGT 4451		Business Policy 1, 2	6
MGT 4456			International Business Management and Operations	3

Choose one computer programming course from:

MIS 4221		COBOL Programming 1	(3)
or		or	
MIS 4241		Programming in BASIC 1	(3)
or		or	
MIS 4251		FORTRAN Programming 1	(3)

Major Concentration Courses

MKT 4401	or	MKT 4301	Introduction to Marketing 1	3
MKT 4402	or	MKT 4302	Introduction to Marketing 2	3
MKT 4420	or	MKT 4320	Marketing Management 1	3
MKT 4410	or	MKT 4310	Advertising Management 1	3
MKT 4411			Advertising Management 2	3
MKT 4415	or	MKT 4315	Sales Management 1	3
MKT 4416			Sales Management 2	3
MKT 4430	or	MKT 4330	Marketing Research 1	3
MKT 4431			Marketing Research 2	3
MKT 4453			International Marketing	3
MKT 4457			Competitive Strategy	3

Electives

Natural science elective (BIO, CHM, or ESC)	3
Open electives	18
Nonbusiness elective	3

Total Quarter Hours	174
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Criminal Justice and Security Degree Programs

Richard J. Comings, *Assistant Dean
Acting Director, Criminal Justice and
Security Programs*
290 Ruggles Building
617-437-2425

Program Consultants

Corrections/Criminology and Research
Prof. Edith E. Flynn
College of Criminal Justice
617-437-2394

Law
Prof. Frank A. Schubert
College of Criminal Justice
617-437-3349

Policing
Prof. George L. Kelling
College of Criminal Justice
617-437-4532

Security
Prof. Norman Bates
College of Criminal Justice
617-437-3367

Purpose

Criminal Justice and Security programs are designed to provide a professional focus to students with a broadly based undergraduate education, to ensure that program graduates are prepared to enter or advance in careers in criminal justice or security administration or to enroll in graduate or professional schools.

Requirements for each program are outlined on the following pages. Upon petition, students may be permitted to substitute other courses that will more adequately serve their specific objectives.

Bachelor of Science Degree Programs

Programs leading to the Bachelor of Science degree are offered in corrections, policing, and security. Students should choose their major in consultation with a program adviser.

Each curriculum provides for not less than 174 quarter hours of work, including at least 75 quarter hours of advanced work in a major field.

Transfer students must complete at least 45 quarter hours of academic work at University College immediately preceding graduation in order to be eligible for a degree.

Associate in Science Degree Programs

Programs leading to the associate's degree are offered for those who wish to obtain a general background in corrections, policing, or security and who may later wish to pursue a bachelor's degree.

Candidates for the associate in science degree must complete a minimum of ninety-six quarter hours of credit. This is approximately one half of the requirements for the bachelor of science degree and includes at least forty-eight quarter hours of work in a major field.

Certificate Programs

Students who seek specialized skills to advance their careers may choose a certificate program, which they may take independently or in conjunction with degree study.

Course Sequence

Upon completion of the courses required for admission, the student should elect courses from the core and major concentration areas to fulfill the requirements for the associate in science and the bachelor of science degrees.

Degree requirements may be completed at the student's own pace. A total of thirty-two courses is required for an associate in science degree, which can be completed in as few as three years, or nine academic quarters. A bachelor of science degree can be completed over a period of five years, or fifteen academic quarters. This schedule averages four courses per academic quarter.

Distribution Requirements

In order to satisfy the distribution requirements in any criminal justice and security program,

students should first discuss their programs with an academic adviser.

English courses ENG 4110, ENG 4111, and ENG 4112 (nine quarter hours) must be taken before admission to a degree program. The remaining required courses, amounting to 33 to 36 quarter hours, should be taken from the core and major concentration courses as listed on the following pages.

Special Studies

University College offers a variety of Special Studies. These courses give students an opportunity to earn credits in Advanced Tutorials, Independent Studies, Honors Programs, and Field Work. Consult descriptions on pages 16–17.

Corrections Associate in Science Degree (Major Code 949)



Core Courses		quarter hours
ENG 4110	ENG 4111	Critical Writing 1, 2 6
ENG 4112		Approaches to Literature 3
HST 4202		American History 1848-1917 3
POL 4104		Introduction to American Government 3
PSY 4110		Introduction to Psychology: Fundamental Issues 3
SOC 4100		Roles, Culture, and the Individual 3
SOC 4186		Social Control 3
CJ 4101		Administration of Criminal Justice 3
CJ 4102		Crime Prevention and Security 3
CJ 4103		Criminology 3
CJ 4104		Dimensions of Crime 3
CJ 4105		Computer Applications in Criminal Justice 3
CJ 4108	CJ 4109	Criminal Law and Procedure 1, 2 6
CJ 4110		Constitutional Law 3
Major Concentration Courses		
CJ 4301		American Correctional System 3
CJ 4302	CJ 4303	Correctional Administration 1, 2 6
CJ 4304		Jail Administration and Management 3
CJ 4305		Case Management and Correctional Services 3
CJ 4306		Correctional Security Methods and Technology 3
CJ 4307		The Rights of Offenders and Prisoners 3
CJ 4308		Correctional Counseling 3
CJ 4309		Comparative Correctional Systems 3
CJ 4310		Community Corrections 3
CJ 4311		Probation and Parole 3
Electives		
Criminal justice and security electives		6
Other electives		9
Total Quarter Hours		96

Corrections Bachelor of Science Degree (Major Code 948)**Core Courses****quarter hours**

ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
HST 4101			The Civilization of the Ancient and Medieval Worlds	3
HST 4103			The Civilization of the Modern World	3
HST 4202			American History 1848-1917	3
PHL 4100			Philosophical Thinking	(3)
or			or	
PHL 4200			Logic	(3)
POL 4103			Introduction to Politics	3
POL 4104			Introduction to American Government	3
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
SOC 4100			Roles, Culture and the Individual	3
SOC 4102			Critical Issues Facing Society	3
SOC 4186			Social Control	3
Mathematics/science courses				6
CJ 4101			Administration of Criminal Justice	3
CJ 4102			Crime Prevention and Security	3
CJ 4103			Criminology	3
CJ 4104			Dimensions of Crime	3
CJ 4105			Computer Applications in Criminal Justice	3
CJ 4106	CJ 4107		Criminal Justice Research 1, 2	6
CJ 4108	CJ 4109		Criminal Law and Procedure 1, 2	6
CJ 4110			Constitutional Law	3

Major Concentration Courses

CJ 4301		American Correctional System	3
CJ 4302	CJ 4303	Correctional Administration 1, 2	6
CJ 4304		Jail Administration and Management	3
CJ 4305		Case Management and Correctional Services	3
CJ 4306		Correctional Security Methods and Technology	3
CJ 4307		The Rights of Offenders and Prisoners	3

continued on the next page

CJ 4308	Correctional Counseling	3
CJ 4309	Comparative Correctional Systems	3
CJ 4310	Community Corrections	3
CJ 4311	Probation and Parole	3
Electives		
Criminal justice and security electives		24
Other electives		30
Total Quarter Hours		174

Policing Associate in Science Degree (Major Code 947)



Core Courses		quarter hours	
ENG 4110	ENG 4111	Critical Writing 1, 2	6
ENG 4112		Approaches to Literature	3
HST 4202		American History 1848–1917	3
POL 4104		Introduction to American Government	3
PSY 4110		Introduction to Psychology: Fundamental Issues	3
SOC 4100		Roles, Culture, and the Individual	3
SOC 4186		Social Control	3
CJ 4101		Administration of Criminal Justice	3
CJ 4102		Crime Prevention and Security	3
CJ 4103		Criminology	3
CJ 4104		Dimensions of Crime	3
CJ 4105		Computer Applications in Criminal Justice	3
CJ 4108	CJ 4109	Criminal Law and Procedure 1, 2	6
CJ 4110		Constitutional Law	3

Major Concentration Courses

CJ 4201	CJ 4202	Criminal Investigation 1, 2	6
CJ 4203	CJ 4204	Criminalistics 1, 2	6
CJ 4205	CJ 4206	Patrol Theory and Administration 1, 2	6
CJ 4207		Comparative Police Systems	3
CJ 4208		Police Operations	3
CJ 4209	CJ 4210	Police Management 1, 2	6
CJ 4211		Police and Social Problems	3

Electives		
Criminal justice and security electives		6
Other electives		9
Total Quarter Hours		96

Policing Bachelor of Science Degree (Major Code 946)



Core Courses				quarter hours
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
HST 4101			The Civilization of the Ancient and Medieval Worlds	3
HST 4103			The Civilization of the Modern World	3
HST 4202			American History 1848-1917	3
PHL 4100			Philosophical Thinking	(3)
or			or	
PHL 4200			Logic	(3)
POL 4103			Introduction to Politics	3
POL 4104			Introduction to American Government	3
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
SOC 4100			Roles, Culture and the Individual	3
SOC 4102			Critical Issues Facing Society	3
SOC 4186			Social Control	3
Mathematics/science courses				6
CJ 4101			Administration of Criminal Justice	3
CJ 4102			Crime Prevention and Security	3
CJ 4103			Criminology	3
CJ 4104			Dimensions of Crime	3
CJ 4105			Computer Applications in Criminal Justice	3
CJ 4106	CJ 4107		Criminal Justice Research 1, 2	6
CJ 4108	CJ 4109		Criminal Law and Procedure 1, 2	6
CJ 4110			Constitutional Law	3
Major Concentration Courses				
CJ 4201	CJ 4202		Criminal Investigation 1, 2	6
CJ 4203	CJ 4204		Criminalistics 1, 2	6
CJ 4205	CJ 4206		Patrol Theory and Administration 1, 2	6
CJ 4207			Comparative Police Systems	3
CJ 4208			Police Operations	3
CJ 4209	CJ 4210		Police Management 1, 2	6
CJ 4211			Police and Social Problems	3

continued on the next page

Electives	
Criminal justice and security electives	24
Other electives	30
Total Quarter Hours	174

Security Associate in Science Degree (Major Code 943)

Core Courses			quarter hours
ENG 4110	ENG 4111	Critical Writing 1, 2	6
ENG 4112		Approaches to Literature	3
HST 4202		American History 1848–1917	3
POL 4104		Introduction to American Government	3
PSY 4110		Introduction to Psychology: Fundamental Issues	3
SOC 4100		Roles, Culture, and the Individual	3
SOC 4186		Social Control	3
CJ 4101		Administration of Criminal Justice	3
CJ 4102		Crime Prevention and Security	3
CJ 4103		Criminology	3
CJ 4104		Dimensions of Crime	3
CJ 4105		Computer Applications in Criminal Justice	3
CJ 4108	CJ 4109	Criminal Law and Procedure 1, 2	6
CJ 4110		Constitutional Law	3

Major Concentration Courses

CJ 4201	CJ 4202	Criminal Investigation 1, 2	6
CJ 4403		Introduction to Security	3
CJ 4404		Industrial Safety and Fire Prevention	3
CJ 4405		Current Security Problems	3
CJ 4406	CJ 4407	Security Administration 1, 2	6
CJ 4408		Legal Aspects of Security Management and Operations	3
CJ 4409	CJ 4410	Physical Security Methods and Technology 1, 2	6
CJ 4411		Electronic Information Security	3

Electives	
Criminal justice and security electives	6
Other electives	9
Total Quarter Hours	96

Security Bachelor of Science Degree (Major Code 942)



Core Courses

quarter hours

ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
HST 4101			The Civilization of the Ancient and Medieval Worlds	3
HST 4103			The Civilization of the Modern World	3
HST 4202			American History 1848–1917	3
PHL 4100			Philosophical Thinking	(3)
or			or	
PHL 4200			Logic	(3)
POL 4103			Introduction to Politics	3
POL 4104			Introduction to American Government	3
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
SOC 4100			Roles, Culture, and the Individual	3
SOC 4102			Critical Issues Facing Society	3
SOC 4186			Social Control	3
Mathematics/science courses				6
CJ 4101			Administration of Criminal Justice	3
CJ 4102			Crime Prevention and Security	3
CJ 4103			Criminology	3
CJ 4104			Dimensions of Crime	3
CJ 4105			Computer Applications in Criminal Justice	3
CJ 4106	CJ 4107		Criminal Justice Research 1, 2	6
CJ 4108	CJ 4109		Criminal Law and Procedure 1, 2	6
CJ 4110			Constitutional Law	3

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Major Concentration Courses

CJ 4201	CJ 4202	Criminal Investigation 1, 2	6
CJ 4403		Introduction to Security	3
CJ 4404		Industrial Safety and Fire Prevention	3
CJ 4405		Current Security Problems	3
CJ 4406	CJ 4407	Security Administration 1, 2	6
CJ 4408		Legal Aspects of Security Management and Operations	3
CJ 4409	CJ 4410	Physical Security Methods and Technology 1, 2	6
CJ 4411		Electronic Information Security	3

Electives

Criminal justice and security electives	24
Other electives	30

Total Quarter Hours	174
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Health Professions and Sciences Degree Programs

Paula M. Vosburgh, *Assistant Dean, Director Health Professions and Sciences Programs*
266 Ruggles Building
617-437-2818

Program Directors and Coordinators

Area program directors and the Director of Health Professions and Sciences Programs have overall responsibility for the academic quality of the health programs in their areas of specialty. *The program coordinators for each area serve as the chief academic advisers for students in their programs.*

Health Professions

HMG: Health Management

Consultant:

Prof. Carl W. Nelson (Health Care Area Coordinator, College of Business Administration)
(617-437-4751)

HRA: Health Record Administration

Program Director:

Prof. Judith Weilerstein (College of Pharmacy and Allied Health Professions) (617-437-3663)

Program Coordinator:

Annalee Collins (College of Pharmacy and Allied Health Professions) (617-437-2525)

Clinical Coordinator:

Honey Schmase (College of Pharmacy and Allied Health Professions) (617-437-3614)

HSC: Health Science

Consultant:

Dr. Theodore Blank (Massachusetts Department of Public Health) (617-727-1960)

MLS: Medical Laboratory Science

Program/Clinical Coordinator:

Barbara Martin (College of Pharmacy and Allied Health Professions) (617-437-4194)

Nursing

Academic Coordinator:

Sandra Conant (University College)
(617-437-2818)

RAD: Radiologic Technology

Program Director:

Kevin J. Powers (University College)
(617-437-2818)

Assistant Director:

Valerie A. Lamb (University College)
(617-437-2818)

REC: Therapeutic Recreation

Consultant:

Prof. George Ransom (Boston-Bouve College of Human Development Professions)
(617-437-3167)

Sciences

BIO: Biology

Consultant:

Prof. Fred A. Rosenberg (College of Arts and Sciences) (617-437-4042)

Laboratory Coordinator:

Kevin Mautte (Biology Department)
(617-437-2263)

CHM: Chemistry

Consultant:

Prof. Philip W. LeQuesne (College of Arts and Sciences) (617-437-2822)

Major Adviser, Chemical/Biological Technology:

Dr. Carl F. Moxey (Senior Lecturer in Biology) (617-437-2260)

Laboratory Coordinator:

Bernard Lemire (College of Arts and Sciences)
(617-437-2811)

ESC: Earth Science

Consultant:

Malcolm Hill (College of Arts and Sciences)
(617-437-4381)

MTH: Mathematics

Consultant:

Francis X. Finigan (Educational Consultant)
(617-484-8496)

Purpose

University College offers part-time programs in allied health to prepare students for advancement and service in hospitals and other health agencies.

The associate's and bachelor's degree programs are designed to provide both professional specialization and general education. All programs meet the accreditation standards of the Committee on Allied Health Education and Accreditation (CAHEA) of the American Medical Association (AMA) and/or of licensing or registration boards where such exist.

Clinical Assignments

Clinical assignments are generally available for students whose programs require directed applied study in a clinical setting. In most instances, lectures are presented at the University, and clinical practice is conducted at hospitals or other health agencies in the Greater Boston area. Positions in applied clinical studies are often offered on a competitive basis, with the student's academic performance used as the basis for acceptance.

Students who accept clinical assignments in health facilities are expected to adhere to the requirements of the facilities, which are outside University control.

Special Studies

U.C. offers a variety of Special Studies. These courses give students an opportunity to earn credits in Advanced Tutorials, Independent Studies, Honors Programs, and Field Work. Consult descriptions on pages 16-17.

Chemical-Biological Technology

Associate in Science Degree

The program in chemical-biological technology helps provide the chemistry and biology foundation required for medical and industrial laboratory assistants and technicians and for persons who have paramedical responsibilities. Employment opportunities may be found in hospitals, health clinics, research foundations, chemical and drug industries, public health organizations, water and sanitation departments, and the emerging field of oceanographic technology.

Bachelor of Science Degree

The Bachelor of Science degree program in chemical-biological technology integrates theoretical and laboratory courses from the fields of chemistry and biology. The program is designed to help prepare students for responsibilities in laboratory careers and in teaching general science. Employment opportunities may be found in a variety of industrial, pharmaceutical, clinical, and hospital laboratories, and in teaching general science, chemistry, biology, and related courses at the secondary school level.

General Science Teacher Option: Students who plan to apply to the University's graduate program at Boston-Bouvé College of Human Development Professions should contact their Department of Education (437-3302) for specific course requirements.

Chemical-Biological Technology Associate in Science Degree (Major Code 803)



Core Courses				quarter hours
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
History (HST) Courses of your choice				9
MTH 4110	MTH 4111	MTH 4112	Math 1, 2, 3	9
MTH 4120	MTH 4121		Calculus 1, 2	8
Major Concentration Courses				
BIO 4103	BIO 4104	BIO 4105	Biology 1, 2, 3	12
BIO 4175	BIO 4176	BIO 4177	Human Anatomy and Physiology 1, 2, 3	9
BIO 4190	BIO 4191	BIO 4192	Microbiology 1, 2, 3	9
CHM 4111	CHM 4112	CHM 4113	General Chemistry 1, 2, 3	9
CHM 4261	CHM 4262	CHM 4263	Organic Chemistry 1, 2, 3	(12)
or			or	
CHM 4221	CHM 4222	CHM 4223	Analytical Chemistry 1, 2, 3	(9)
PHY 4101	PHY 4102		College Physics 1, 2	8
Electives				
Liberal Arts				6
Chemistry or Biology as needed to complete total credits				
Total Quarter Hours				97-100

Chemical-Biological Technology Bachelor of Science Degree (Major Code 804)



Core Courses				quarter hours
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
MTH 4110	MTH 4111	MTH 4112	Math 1, 2, 3	9
MTH 4120	MTH 4121		Calculus 1, 2	8
BIO 4103	BIO 4104	BIO 4105	Biology 1, 2, 3	12
BIO 4175	BIO 4176	BIO 4177	Human Anatomy and Physiology 1, 2, 3	9
CHM 4111	CHM 4112	CHM 4113	General Chemistry 1, 2, 3	9
PHY 4101	PHY 4102		College Physics 1, 2	8
Economics (ECN) Courses of your choice				6
History (HST) Courses of your choice				9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	(3)
or			or	
PSY 4112			Introduction to Psychology: Personal Dynamics	(3)
Sociology (SOC) Courses of your choice				9
Major Concentration Courses				
BIO 4190	BIO 4191	BIO 4192	Microbiology 1, 2, 3	9
BIO 4224	BIO 4225	BIO 4226	Ecology 1, 2, 3	9
BIO 4235	BIO 4236	BIO 4237	Genetics 1, 2, and Lab	(8)
or			or	
BIO 4246	BIO 4247	BIO 4248	Cell Biology 1, 2, and Lab	(8)
BIO 4374	BIO 4375	BIO 4376	Histology 1, 2, 3	9
BIO 4456			Introduction to Biotechnology	3
CHM 4221	CHM 4222	CHM 4223	Analytical Chemistry 1, 2, 3	9
CHM 4261	CHM 4262	CHM 4263	Organic Chemistry 1, 2, 3	12
CHM 4321	CHM 4322		Instrumental Analysis 1, 2	6
CHM 4323			Radiochemistry	(3)
or			or	
CHM 4333			Chemical Separations	(3)
CHM 4381	CHM 4382	CHM 4383	Physical Chemistry 1, 2, 3	(9)
or			or	
CHM 4371	CHM 4372	CHM 4373	Biochemistry 1, 2, 3	(9)
Earth Science Electives				6
Electives as needed to complete total credits				
Total Quarter Hours				177

Health Management

The health care industry is changing rapidly in response to increasing competition, rising costs, technological advances, the growth of alternative delivery systems, and an aging population.

University College's Bachelor of Science Degree program in Health Management is intended for those who wish to prepare, on a

part-time basis, for entry into or advancement in managerial positions in the health care field.

The program combines professional competencies with a liberal arts education to help direct students toward either entry-level positions or positions of increasing responsibility in health services administration. The curriculum also provides a foundation for graduate studies in MBA and MHA programs.

Health Management Bachelor of Science Degree (Major Code 860)



Core Courses

General Education

quarter hours

ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
MTH 4110	MTH 4111	MTH 4112	Math 1, 2, 3	9
HMG 4200			Health Science Statistics	3
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
SOC 4100			Roles, Culture, and the Individual	3
POL 4103			Introduction to Politics	3
PSY 4110			Introduction to Psychology: Fundamental Issues	3
COM 4101			Foundations of Computer Literacy	4

Management

MGT 4101	MGT 4102	Introduction to Business and Management 1, 2	6
ACC 4101	ACC 4102	Accounting Principles 1, 2	6
FI 4301		Principles of Finance	3
HRM 4301		Organizational Behavior	3
MKT 4301		Introduction to Marketing 1	3

Major Concentration Courses

HMG 4301		Health Care Delivery Systems	3
HMG 4100	HMG 4101	Hospital Organization and Management 1, 2	6
HMG 4325		Health Planning and Regulation	3
HRA 4302		Medical Terminology Survey	3

continued on the next page

HMG 4390	The Patients' Impact on Decision-Making	3
HSC 4310	Public Health 1	3
HMG 4580	Information Processing in Health Care	3
HMG 4215	Health Law	3
HMG 4400 HMG 4401	Health Care Financial Management 1, 2	6
HMG 4445	Health Care Marketing and Communication	3
HMG 4440	Health Care Operations Management	3
HMG 4260	Senior Seminar in Health Care Management*	1
HMG 4429	Health Care Delivery's Changing Environment*	2
HMG 4650	Supervised Field Experience 1†	6
HMG 4651	Supervised Field Experience 2†	6

Electives

Liberal Arts electives	12
Health science or health management electives	6
Science electives (CHM, BIO, ESC, MTH)	12

*Must be taken concurrently during the student's last year in the program.

†Students must have completed seventy-five percent of their degree requirements before taking these courses. Students must apply for each assignment no later than two full quarters prior to the desired starting date.

Professional Specialization

Students complete their course of study by electing one of the following 27-quarter-hour options designed to meet their professional objectives.

Option 1: Continuing Care Administration

Licensure as a nursing home administrator requires an internship, a licensure examination, and a bachelor's degree. The required courses in this option help prepare students for the Massachusetts Licensure Examination. Students are advised, however, to contact the Board of Registration of Nursing Home Administrators for the specific eligibility requirements needed for this examination.

HMG 4600 HMG 4601 HMG 4602	Long-Term Care Administration (A, B, C)*	18
<i>Choose nine quarter hours from the following.</i>		
SOC 4225	Social Gerontology	(3)
HMG 4300	Home Health Care	(3)
HSC 4610	Geriatric Nutrition	(3)
REC 4401	The Nursing Home Experience	(3)
REC 4460	The Process of Aging	(3)
HSC 4210	Basic Nutrition	(3)
HSC 4220	Basic Pharmacology	(3)

*This series of courses offered in even numbered academic years.

Option 2: Community Health Management

HMG 4310	HMG 4311	Principles and Practices of Community Health 1, 2	6
MLS 4341	MLS 4342	Epidemiology 1, 2	6
HSC 4311		Public Health 2	3
<i>Choose twelve quarter hours from the following.</i>			
ACC 4110		Management Control for Nonprofit Organizations	(3)
HMG 4300		Home Health Care	(3)
HMG 4550	HMG 4551	Contemporary and Controversial Health Care Issues 1, 2	(6)
HMG 4610		Principles and Practices of Community Mental Health	(3)
HRM 4320		Techniques of Employee Selection	(3)
HRM 4340		Public Sector Collective Bargaining in the United States	(3)
HSC 4315		Environmental Problems and Health	(3)
MKT 4335		Public Relations 1	(3)
SOC 4215		Medical Sociology	(3)
SOC 4240		Sociology of Human Service Organizations	(3)
SOC 4241		Human Services Professions	(3)

Option 3: General

*Choose courses from (EMS, HMG, HRA, HSC, MLS, REC, RAD)** 15

Choose 12 quarter hours from the following.

ECN 4130	Medical Economics	(3)
ECN 4321	Urban Economic Problems and Policies	(3)
ENG 4380	Business Writing and Reports 1	(3)
FI 4326	Financial Control	(3)
FI 4325	Budgeting and Planning	(3)
FI 4321	Credit Management	(3)
HRM 4321	Wage and Salary Administration	(3)
HRM 4322	Employee Benefits	(3)
HRM 4323	Job Evaluation	(3)
HRM 4341	Private Sector Collective Bargaining in the United States	(3)
MGT 4320	Managing Change	(3)
POL 4300	Introduction to Public Administration	(3)

Total Quarter Hours 175

*These courses must be taken at Northeastern University.

Health Record Administration

The health record administrator's varied responsibilities relate to health information systems and include the organization, operation, and management of health record services. Required skills for this profession include the ability to design health information and retrieval systems; plan, organize, and direct health record services; develop, analyze, and evaluate health records and indexes; work with medical and administrative staffs in developing methods for evaluation of patient care; and conduct research projects using health care information.

Students who successfully complete this program qualify for admission to the professional registration examinations conducted by the American Medical Record Association.

Potential students must be interviewed by the Program Coordinator. Arrangement can be made through the Health Records Office, 205 Mugar Building, telephone 617-437-2525.

Professional Certification

An individual who wishes to qualify for registration as a medical record administrator and who already holds a bachelor's degree in

another field of study from a college or university acceptable to Northeastern University may take the Health Record Administration Certificate Program. Upon completion of this program with a cumulative quality-point average of 2.5 or higher, students will receive certification from University College. In addition to the required courses, students must complete one year of a natural science, such as biology, chemistry, or microbiology. Students also must demonstrate an understanding of the principles of descriptive statistics. This requirement may be satisfied by successful completion of an approved statistics course with a grade of C or better. These requirements are in addition to the laboratory course in anatomy and physiology.

In designated professional courses (*), students must obtain a grade of C or better. Only one professional course may be repeated. Students who receive a grade of D in more than one professional course will be asked to withdraw from the program.

Students who apply for the clinical courses HRA 4335, HRA 4336, and HRA 4337 must have a quality-point average of 2.5 and the approval of their adviser.

Health Record Administration Bachelor of Science Degree (Major Code 866)



Core Courses				quarter hours
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
MTH 4110	MTH 4111		Math 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
Psychology (PSY) Courses of your choice				9
BIO 4103	BIO 4104	BIO 4105	Biology 1, 2, 3	12
BIO 4175	BIO 4176	BIO 4177	Human Anatomy and Physiology 1, 2, 3*	9
ECN 4250	ECN 4251		Statistics 1, 2	(6)
or			or	
HMG 4200			Health Science Statistics	(3)

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Choose either:

History (HST) Courses of your choice (9)

or

Political Science (POL) Courses of your choice (9)

Sociology (SOC) Courses of your choice 9

Major Concentration Courses

HMG 4215			Health Law*	3
HMG 4301			Health Care Delivery Systems*	3
HRA 4305	HRA 4306		Language of Medicine 1, 2†	4
HRA 4308			Hospital Management for Health Record Administrators*	3
HRA 4310	HRA 4311	HRA 4312	Health Record Science 1, 2, 3*	18
HRA 4313	HRA 4314		Health Record Science 4, 5*	12
HRA 4320	HRA 4321	HRA 4322	Organization of the Health Record Department 1, 2, 3	9
HRA 4335	HRA 4336	HRA 4337	Clinical Practicum 1, 2, 3*	8
HRA 4330			Health Record Computer Science*	3
HRA 4332			Topics in Health Records	3
HRM 4301			Organizational Behavior	3
HSC 4301	HSC 4302		Mechanisms of Disease 1, 2	6
MIS 4101			Introduction to Data Processing and Information Systems 1	(3)
or			or	
COM 4101			Foundations of Computer Literacy	(4)

Electives

Social science or humanities electives 21

Total Quarter Hours 177-178

*Students must obtain a grade of C or better in this course.

†A challenge examination is available for this course. Call 617-437-2525 for details.



Health Record Administration Certificate Program (Major Code 867)

Core Courses			quarter hours
BIO 4175	BIO 4176	BIO 4177	Human Anatomy and Physiology 1, 2, 3
			9
HMG 4215			Health Law
			3
HMG 4301			Health Care Delivery Systems
			3
HRA 4305	HRA 4306		Language of Medicine 1, 2*
			4
HRA 4308			Hospital Management for Health Record Administrators
			3
HRA 4310	HRA 4311	HRA 4312	Health Record Science 1, 2, 3
			18
HRA 4313	HRA 4314		Health Record Science 4, 5
			12
HRA 4320	HRA 4321	HRA 4322	Organization of the Health Record Department 1, 2, 3
			9
HRA 4324	HRA 4325	HRA 4326	Applied Health Record Science 1, 2, 3
			8
HRA 4330			Health Record Computer Science
			3
HRA 4332			Topics in Health Records
			3
HSC 4301	HSC 4302		Mechanisms of Disease 1, 2
			6
MIS 4101			Introduction to Data Processing and Information Systems 1
			(3)
or			or
COM 4101			Foundations of Computer Literacy
			(4)
Total Quarter Hours			84-85

*A challenge examination is available for this course. Call 617-437-2525 for details.

Health Science

The Bachelor of Science Degree in health science is available to students holding registration, certification, or licensure (as defined by University regulations) in a specific health profession. A further prerequisite is training in an approved program

accredited by an appropriate medical association such as the American Medical Association, National League for Nursing, or American Dental Association.

Students interested in this program should consult with an academic adviser to determine their eligibility.

Health Science Bachelor of Science in Health Science Degree (Major Code 865)



Core Courses			quarter hours
ENG 4110	ENG 4111		Critical Writing 1, 2
			6
ENG 4112			Approaches to Literature
			3
Humanities (ART, ASL, DRA, ENG, JRN, LN, MUS, PHL, SPC, TCC)			9
Social Sciences (ECN, HST, POL, PSY, SOA, SOC)			9

General

Choose 12 quarter hours from any of the humanities or social science areas listed above:

continued on the next page

Basic Sciences

BIO 4103	BIO 4104		Biology 1, 2	8
BIO 4175	BIO 4176	BIO 4177	Human Anatomy and Physiology 1, 2, 3	9
BIO 4190			Microbiology 1	3
COM 4101			Foundations of Computer Literacy	4
CHM 4111	CHM 4112	CHM 4113	General Chemistry 1, 2, 3	9
MTH 4110	MTH 4111	MTH 4112	Math 1, 2, 3	9

Advanced Sciences

Choose a minimum of 9 quarter hours from the following:

BIO 4235	BIO 4236	BIO 4237	Genetics 1, 2, and Lab	(8)
BIO 4246	BIO 4247	BIO 4248	Cell Biology 1, 2, and Lab	(8)
BIO 4258	BIO 4259		Advanced Human Physiology 1, 2	(6)
BIO 4320			Medical Microbiology	(4)
BIO 4461			Immunology	(4)
CHM 4261	CHM 4262	CHM 4263	Organic Chemistry 1, 2, 3	(12)
HSC 4600			Advanced Nutrition	(3)
HSC 4601			Advanced Pharmacology	(3)
MLS 4321			Hematology	(3)
MLS 4322	MLS 4323		Morphologic Hematology 1, 2	(6)
PHY 4101	PHY 4102		College Physics 1, 2	(8)

Major Concentration Courses**Basic**

HMG 4200		Health Science Statistics	3
HSC 4301	HSC 4302	Mechanisms of Disease 1, 2	6
HMG 4100	HMG 4101	Hospital Organization and Management 1, 2	6
HSC 4320	HSC 4321	Training and Development in the Health Professions 1, 2	6

Choose 18 quarter hours from the following:

HMG 4215		Health Law	(3)
HMG 4301		Health Care Delivery Systems	(3)
HMG 4310	HMG 4311	Principles and Practices of Community Health 1, 2	(6)
HMG 4550	HMG 4551	Contemporary and Controversial Health Care Issues 1, 2	(6)
HMG 4610		Principles and Practices of Community Mental Health	(3)
HSC 4210		Basic Nutrition	(3)
HSC 4220		Basic Pharmacology	(3)
HSC 4310	HSC 4311	Public Health 1, 2	(6)
HSC 4315		Environmental Problems and Health	(3)

continued on the next page

MLS 4341			Epidemiology 1	(3)
REC 4460			Process of Aging	(3)
<i>Students with a clinical laboratory background may choose 18 quarter hours from the following:</i>				
BIO 4235	BIO 4236	BIO 4237	Genetics 1, 2, and Lab*	(8)
BIO 4246	BIO 4247	BIO 4248	Cell Biology 1, 2, and Lab*	(8)
BIO 4461			Immunology*	(4)
CHM 4224			Analytical Chemistry	(4)
CHM 4381	CHM 4382	CHM 4383	Physical Chemistry 1, 2, 3	(9)

Advanced

Choose 6 to 9 quarter hours from the following:

HMG 4210	HMG 4211	Medical Care and Current Social Problems 1, 2	(6)
HMG 4400	HMG 4401	Health Care Financial Management 1, 2	(6)
HSC 4602		Methods and Materials in Public Health Education	(3)
HSC 4610		Geriatric Nutrition	(3)
HSC 4613		Oral Microbiology	(3)
HSC 4614	HSC 4615	Advanced Periodontology 1, 2	(6)
MLS 4342		Epidemiology 2	(3)
RAD 4450		Computerized Body Tomography Pathology	(3)
RAD 4304		Cross-Sectional Anatomy	(4)
RAD 4400		Anatomy of the Head and Neck	(3)

Students with a clinical laboratory background may choose 6 to 9 quarter hours from the following:

BIO 4191	BIO 4192	Microbiology 2, 3	(6)
BIO 4258	BIO 4259	Advanced Human Physiology 1, 2*	(6)
BIO 4320		Medical Microbiology*	(4)
CHM 4321	CHM 4322	Instrumental Analysis 1, 2	(6)
CHM 4323		Radiochemistry	(3)
MLS 1323		Hemostasis†	(2)
MLS 1324		Histochemistry†	(2)
MLS 1331		Clinical Immunology†	(3)
MLS 1333		Immunohematology†	(2)
MLS 4322	MLS 4323	Morphologic Hematology 1, 2*	(6)
MLS 4365		Quality Control	(3)

Electives and/or transfer credits to equal 40

Total Quarter Hours

175-178

*These courses may be used in only one category; requirements must be fulfilled in each category.

†Tuition for this course is at the special rate.

Medical Laboratory Science— Medical Technology

Medical laboratory science (MLS) is concerned with laboratory examination of material necessary for monitoring health and for diagnosing and treating illness. Medical laboratory technicians and technologists work in a variety of specialized fields such as microbiology, blood banking, hematology, or clinical chemistry, or as generalists in all these areas.

The medical laboratory technician holding an associate's degree works under the direct supervision of a medical technologist and performs most common medical laboratory tests. The medical technologist, who must have a bachelor's degree, is considered qualified to perform tests with little or no direct supervision. With additional education or experience, medical technologists can become educators, researchers, or supervisors. They may serve as sales and technical representatives for scientific supply and equipment companies or serve in government positions.

Both degree programs are conducted in affiliation with Boston-area hospitals and are accredited by the Committee of Allied Health Education and Accreditation of the American Medical Association. Upon successful completion of either the associate's or bachelor's degree program, the student is eligible to take a national certification examination given by the National Certification Agency for Medical Laboratory Personnel or the Board of Registry of the American Society of Clinical Pathology.

The basic courses in medical laboratory science, science, and education are offered evenings, but the advanced medical laboratory science courses and the clinical experience are offered full-time during the day only.

Associate's Degree Professional Requirements

A clinical applied study program (or appropriate work experience) is required toward this degree. Work experience is acceptable if it

meets the requirements for certification of either the National Certification Agency for Medical Laboratory Personnel or the Board of Registry of the American Society of Clinical Pathologists. Students without appropriate work experience can apply for clinical applied studies through the University College MLS Clinical Coordinator, 206 Mugar, 617-437-3664. This should be done one year in advance of the anticipated entry into clinical courses.

Prerequisites for clinical applied studies are a minimum of a 2.0 quality-point average in the required courses and a C– or better in each medical laboratory science (MLS) course. These basic courses are available during the evening and on an every-other-year basis through the College of Pharmacy and Allied Health Professions. Students register for these courses in the College of Pharmacy and Allied Health Professions, 206 Mugar. Tuition is at a special rate. These courses should be completed within three years of applying to the AD-MLT Clinical Applied Studies.

Bachelor's Degree Professional Requirements

Clinical applied study courses are available on a full-time basis only and are offered through the College of Pharmacy and Allied Health Professions. Students must apply for applied study courses one year in advance. Students should note that although most courses are offered evenings, it is necessary to attend full-time days for 3 quarters of clinical and 1 quarter of classroom course work. During this time the student must meet all the requirements of the last four quarters of the undergraduate Basic College curriculum for the Bachelor of Science Degree. Students register for clinical applied study in the College of Pharmacy and Allied Health Professions, 206 Mugar. Tuition is at a special rate.

Prerequisites for the clinical applied study component include completion of each MLS course with a C– or better within five years of application to the applied study and completion of all other courses with a quality-point average of 2.5 or better.

Medical Laboratory Science—Medical Laboratory Technician Associate in Science Degree (Major Code 800)



Core Courses				quarter hours
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
HMG 4210			Medical Care and Current Social Problems	3
HMG 4215			Health Law	3
MTH 4107	MTH 4108		College Algebra and Introduction to Calculus	8
BIO 4103	BIO 4104	BIO 4105	Biology 1, 2, 3	12
BIO 4175	BIO 4176	BIO 4177	Human Anatomy and Physiology 1, 2, 3	9
CHM 4111	CHM 4112	CHM 4113	General Chemistry 1, 2, 3	9
Major Concentration Courses				
MLS 4301			Medical Laboratory Science Orientation	2
MLS 1311			Basic MLS Urinalysis*	2
MLS 1321	MLS 1322		Basic MLS Hematology 1*, 2*	4
MLS 1330			Basic MLS Immunohematology*	2
MLS 1331			Basic MLS Clinical Immunology*	3
MLS 1341			Basic MLS Clinical Microbiology*	4
MLS 1351			Basic MLS Clinical Chemistry*	4
MLS 1412			MLT Special Topics	2
MLS 1423			MLT Hematology Applied Study	2
MLS 1432			Immunohematology Applied Study	2
MLS 1442			MLT Microbiology Applied Study	2
MLS 1452			MLT Clinical Chemistry Applied Study	2
MLS 1480			MLT Seminar 1	2
Electives				
Computer science				3
Humanities				6
Social science				3
Open electives				6
Total Quarter Hours				104

*Tuition for this course is at a special rate.

Medical Technology—Medical Technologist Bachelor of Science Degree (Major Code 801)



				quarter hours
Credits from Medical Laboratory associate's degree program				104
BIO 4235	BIO 4236	BIO 4237	Genetics 1, 2, and Lab	8
BIO 4246	BIO 4247	BIO 4248	Cell Biology 1, 2, and Lab	8
CHM 4261	CHM 4262	CHM 4263	Organic Chemistry 1, 2, 3	12
MLS 4341			Epidemiology 1	3
PHY 4101	PHY 4102		College Physics 1, 2	8

Major Concentration Courses

Please refer to the current Northeastern University *Basic Day College Course Description and Curriculum Guide* for course descriptions of the following clinical applied-study courses. Tuition for these courses is at a special rate; to register, call 617-437-3664.

MLS 1523			Applied Hematology	4
MLS 1532			Applied Immunohematology	3
MLS 1544			Applied Clinical Microbiology	7
MLS 1552			Applied Clinical Chemistry	7
MLS 1621	MLS 1622		Advanced Hematology 1, 2	5
MLS 1631			Advanced Immunohematology	2
MLS 1642			Medical Parasitology	2
MLS 1643			Medical Mycology	3
MLS 1645	MLS 1646	MLS 1647	Advanced Clinical Microbiology 1, 2, 3	6
MLS 1651	MLS 1652	MLS 1653	Advanced Clinical Chemistry 1, 2, 3	6
MLS 1661			MLS Education	2
MLS 1665			MLS Management	2
MLS 1680			MLS Special Topics	2
MLS 1681			MLS Senior Seminar	2
MLS 1890			Undergraduate Research (Optional)	(2)

Electives

Psychology and statistics are strongly recommended electives.

Computer science	3
Humanities	3
Social science	3
Open electives	3

Total Quarter Hours

208-210

Medical Laboratory Science— Hematology

Hematology is a specialty within medical laboratory science. Hematology technologists may be employed in hospitals and clinical laboratories, where they perform specific laboratory tests that aid in the diagnosis, treatment, and follow-up of infections, anemias, leukemias, and bleeding disorders.

The requirements for categorical certification in hematology are indicated by the Board of Registry of the American Society of Clinical Pathologists and the National Certification Agency. Students should contact the American Society of Clinical Pathologists, Board of Registry, P.O. Box 96215, Chicago, IL 60693, and the National Certification Agency for Medical Laboratory Personnel,

Department 4064, Washington, D.C. 20061-4064, for details concerning eligibility to write the hematology examination.

The hematology curriculum is designed primarily for those who already work in this field. Documentation of hematology work experience must be supplied to the Office of Academic and Student Affairs, prior to entering the professional (MLS) courses. Necessary forms and procedures may be obtained by contacting the Medical Laboratory Coordinator, 617-437-3664.

All professional clinical courses in medical laboratory science are offered directly through the College of Pharmacy and Allied Health Professions. Students must register for the courses through this college, 206 Mugar, 617-437-3664. Tuition is at a special rate. A grade of C– or better is required in the professional courses.

Hematology Bachelor of Science Degree (Major Code 807)



Core Courses				quarter hours
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
MTH 4107	MTH 4108		College Algebra and Introduction to Calculus	8
BIO 4103	BIO 4104	BIO 4105	Biology 1, 2, 3	12
BIO 4175	BIO 4176	BIO 4177	Human Anatomy and Physiology 1, 2, 3	9
BIO 4190			Microbiology	(3)
or			or	
MLS 1341			Basic MLS Clinical Microbiology	(4)
or			or	
BIO 4320			Medical Microbiology	(3)
BIO 4235	BIO 4236	BIO 4237	Genetics 1, 2, and Lab	8
BIO 4246	BIO 4247	BIO 4248	Cell Biology 1, 2, and Lab	8
CHM 4111	CHM 4112	CHM 4113	General Chemistry 1, 2, 3	9
CHM 4221	CHM 4222	CHM 4223	Analytical Chemistry 1, 2, 3	(9)
or			or	
CHM 4224			Analytical Chemistry (Summer Intensive)	(4)
CHM 4261	CHM 4262	CHM 4263	Organic Chemistry 1, 2, 3	12
HMG 4100	HMG 4101		Hospital Organization and Management 1, 2	6
HMG 4210	HMG 4211		Medical Care and Current Social Problems 1, 2	6
HMG 4215			Health Law	3
PHY 4101	PHY 4102		College Physics 1, 2	8

continued on the next page



Major Concentration Courses

HSC 4320	HSC 4321	Training and Development in the Health Professions 1, 2	6
MLS 1311		Basic MLS Urinalysis*	2
MLS 1321		Basic MLS Hematology 1*	2
MLS 1322		Basic MLS Hematology 2*	2
MLS 1323		Advanced Hemostasis Techniques*	2
MLS 1324		Histochemistry*	2
MLS 1330		Basic MLS Immunohematology*	2
MLS 1331		Basic MLS Clinical Immunology*	3
MLS 1333		Immunohematology*	2
MLS 1351		Basic MLS Clinical Chemistry*	4
MLS 1642		Medical Parasitology (offered days only)*	2
MLS 1890		Undergraduate Research*	2
MLS 4301		MLS Orientation (required if not working in the field)	2
MLS 4322	MLS 4323	Morphologic Hematology 1, 2	6
MLS 4365		Quality Control	3

Electives

Histology, psychology, economics, sociology, statistics, hematology, a computer course, and epidemiology are strongly recommended electives.

Humanities	9
Social sciences	9
Open electives	18

Total Quarter Hours**181-189**

*Tuition for this course is at a special rate. Please refer to the current Northeastern University *Basic Day College Course Description and Curriculum Guide* for the course description. To register, call 617-437-3664.

Nursing (Evening Section)

University College offers a Bachelor of Science in Nursing Degree program for registered nurses in collaboration with the College of Nursing, which is fully accredited by the National League for Nursing.

The program is unique in that it allows students to fulfill, in the evening, both classroom and clinical components of *Nursing Transition* (NUR 4300), *Community Health Nursing* (NUR 4500), *Contemporary Nursing* (NUR 4501), and *Introduction to Nursing Research* (NUR 4502). The program is also unique in that students are able to accelerate their course of study by taking advantage of subject matter examinations. Approximately 75% of the curriculum is able to be tested out in this manner.

Admission Procedure

The following credentials are required to enter the part-time evening program and should be forwarded to the Office of Academic and Student Affairs, University College, Northeastern University, 180 Ruggles, 360 Huntington Avenue, Boston, MA 02115:

- a resume detailing education, professional work experience, and professional and community activities

- official transcripts from high school, college or university, and basic nursing school (the nursing school transcript should include a senior summary statement)
- a copy of your Massachusetts Registered Nurse license
- a completed Nursing Program Application (available from the Office of Academic and Student Affairs)
- a reference from your most recent nursing employer
- proof of satisfactory completion of the NLN Mobility Profile II Examination.

Pre-admission counseling is available by calling the Office of Academic and Student Affairs at 617-437-2400.

Planning a Program of Study

Potential students must plan their program of study with the Academic Coordinator. Appointments can be arranged by calling 617-437-2818.

Potential and current students are encouraged to attend group information sessions in order to increase their awareness of University College and College of Nursing policies. These sessions cover course requirements, promotional policies, advanced placement examinations, and nursing course petition procedures. To register, call 617-437-2818.

Nursing (Evening Section) Bachelor of Science in Nursing Degree (Major Code 809)



Core Courses				quarter hours
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
BIO 4103	BIO 4105		Biology 1, 3	8
BIO 4175	BIO 4176	BIO 4177	Human Anatomy and Physiology 1, 2, 3	9
BIO 4190			Microbiology 1	3
CHM 4111	CHM 4112	CHM 4113	General Chemistry 1, 2, 3	9
NUR 4302			Pharmacodynamics	(3)
or			or	
HSC 4601			Advanced Pharmacology	(3)
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
PSY 4240			Development: Infancy and Childhood	3
PSY 4241			Development: Adolescence	3
PSY 4242			Development: Adulthood and Aging	3
PSY 4270	PSY 4271		Social Psychology 1, 2	6
SOA 4101			Cultural Anthropology: Preliterate Societies	3
SOA 4102			Cultural Anthropology: Industrial Societies	3
SOC 4100			Roles, Culture, and the Individual	3
SOC 4101			Inequality and Institutions	3
one history course of your choice				3
Major Concentration Courses				
NUR 4300			Nursing Transition**	9
NUR 4301			Psychiatric/Mental Health Nursing†	7
NUR 4400			Maternal and Child Nursing†	9
NUR 4401			Medical Surgical Nursing†	9
NUR 4500			Community Health Nursing*	9
NUR 4501			Contemporary Nursing*	5
NUR 4502			Introduction to Nursing Research*	4
Electives				
Humanities				9
Open electives				15
Total Quarter Hours				177-178

*Students must submit a petition to the Academic Coordinator to enter *each* nursing course. Petitions must be submitted at least one full quarter in advance of registering. Students petitioning to enter NUR 4300, Nursing Transition, must also obtain a health clearance from the Lane Health Center and present evidence of having had a tuberculin skin test within the previous twelve months. **Advanced standing credit of twenty quarter hours is awarded upon successful completion of this course.

†Challenge examinations are available for this course through the NLN Mobility Profile II Examination, a component of the admissions process.

Paramedic Technology

The Paramedic Technology Program provides the opportunity to earn an Associate in Science Degree. Major concentration areas involve the EMT-Paramedic's roles, responsibilities and the subject areas required by Massachusetts Department of Public Health regulations and national guidelines. These areas include: medical terminology, patient assessment and initial management, airway and ventilation, pathophysiology of shock, general pharmacology, trauma and burns, respiratory system, cardiovascular system, endocrine emergencies, nervous system, acute abdomen, genitourinary and reproductive systems, anaphylaxis, toxicology, alcoholism and drug abuse, infectious diseases, environmental injuries, geriatrics, pediatrics,

obstetrics, gynecological and neonatal emergencies, behavioral emergencies, EMS systems, medical/legal considerations, communications, rescue, major incident response, and stress management.

Admissions requirements: completion and submission of an application form; high school diploma or equivalent; national, state or provincial certification as an Emergency Medical Technician; official high school or college transcripts; entrance examination; Admissions Committee interview; and physical examination.

Students who successfully complete the Paramedic Certificate Courses curriculum may apply for and take the National Registry of Emergency Medical Technicians Paramedic Certification Examination. For further information, call 617-272-5500.

Paramedic Technology Associate in Science Degree (Major Code 874)



Core Courses			quarter hours
EMS 4117	EMS 4118	EMS 4119	Emergency Medical Services 1, 2, 3, 4
EMS 4120			24
EMS 4121	EMS 4122		Emergency Medical Services 5, 6
EMS 4123			22
			Emergency Medical Service 7
			3
BIO 4178	BIO 4198		Human Anatomy and Physiology 1 and Lab
			4
BIO 4179	BIO 4199		Human Anatomy and Physiology 2 and Lab
			4
Liberal Arts and Computer Courses			
ENG 4110	ENG 4111		Critical Writing 1, 2
			6
ENG 4112			Approaches to Literature
			3
MTH 4110	MTH 4111		Math 1, 2
			6
SPC 4101			Fundamentals of Human Communication
			3
PSY 4110			Introduction to Psychology: Fundamental Issues
			3
PSY 4112			Introduction to Psychology: Personal Dynamics
			3
HST 4103			Civilization of Modern World
			3
LNS 4101	LNS 4102		Beginning Conversational Spanish 1, 2
			8
COM 4101			Foundations of Computer Literacy
			4
Total Quarter Hours			96

Radiologic Technology

The Radiologic Technology program is a joint offering of the University and several area hospitals. Classroom experience is provided by the University, and the laboratory practicum is conducted at an assigned affiliated hospital. The program is accredited by the Council on Medical Education of the American Medical Association.

The Radiologic Technologist is an important figure in the diagnostic and therapeutic environment of the hospital or clinic, as well as in industrial production, quality control, and inspection laboratories. Responsibilities demand rapport with internists, surgeons, pathologists, nurses, and laboratory personnel. Each of the three associate of science degree options provides graduates with full tracking into bachelor of science degree programs in health science or health management through University College. Bachelor degree courses may be taken on a full or part-time basis and are designed to assist graduates in their career growth as health managers, health educators and advanced imaging specialists.

Prerequisite: Satisfactory completion of three years of high school math (*Algebra 1* and *2* and geometry), one year of biology, and one year of chemistry or physics. Applicants must also satisfactorily complete the Scholastic Aptitude Test (SAT) and submit one letter of recommendation from a science instructor. In addition, applicants must satisfy general University requirements. Candidates who successfully meet the above requirements may then schedule an interview with the Radiologic Technology Program Director.

Associate in Science Degree Full-Time Day Program (806)

The associate in science degree program is a full-time day program. Graduates are eligible to take the examination for certification by the American Registry of Radiologic Technologists. The full-time day curriculum is scheduled over twenty-seven months with early exit options available for students with transfer credit or students who wish to take an accelerated course sequence. Early exit provides graduates with the opportunity to enter the job market and/or begin work on their bachelor degree studies.

Associate in Science Degree Part-Time Evening Program (811)

A part-time evening option exists for students unable to participate in the full-time day program. Candidates must recognize that a full-time day clinical practicum commitment is necessary after completion of all part-time evening course requirements.

Part-Time Evening Program for Radiographers (810)

University College also offers an associate of science degree program for registered technologists; the program requires fewer major concentration courses.

Candidates who wish to apply to this program must be registered by the American Registry of Radiologic Technologists.

Radiologic Technology Associate in Science Degree (Major Codes 806/811)



Core Courses

				quarter hours
BIO 4103			Biology 1	4
BIO 4175	BIO 4176	BIO 4177	Human Anatomy and Physiology 1, 2, 3	9
COM 4101			Foundations of Computer Literacy	4
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
HMG 4100			Hospital Organization and Management 1	3
MTH 4110	MTH 4111		Math 1, 2	6
PSY 4110			Introduction to Psychology: Fundamental Issues	3

Major Concentration Courses

RAD 4100	RAD 4101	Radiologic Technology Orientation 1, 2	6
RAD 4102	RAD 4103	Radiologic Science 1, 2	8
RAD 4104	RAD 4105	Principles of Radiology 1, 2	8
RAD 4106	RAD 4107	Radiologic Photography and Exposure 1, 2	8
RAD 4116 RAD 4119	RAD 4117 RAD 4118	Radiology Practicum 1, 2, 3, 4	16
RAD 4121	RAD 4122	Principles of Photography and Exposure Lab 1, 2	2
RAD 4304		Cross-Sectional Anatomy	4
RAD 4305		Advanced Radiologic Technology 1	4
RAD 4306		Radiation Protection—Radiobiology	4
Total Quarter Hours			98

**Part-Time Associate in Science Degree Program for Radiographers
(Major Code 810)**


Transfer credit for completion of prerequisite.* 50 q.h.

Core Courses**quarter hours**

BIO 4103		Biology 1	4
COM 4101		Foundations of Computer Literacy	4
ENG 4110	ENG 4111	Critical Writing 1, 2	6
ENG 4112		Approaches to Literature	3
HMG 4100		Hospital Organization and Management	3
MTH 4110	MTH 4111	Math 1, 2	6
PSY 4110		Introduction to Psychology: Fundamental Issues	(3)
or		or	
SOC 4100		Roles, Culture, and the Individual	(3)
PSY 4111		Introduction to Psychology: Developmental Aspects	(3)
or		or	
SOC 4101		Inequality and Institutions	(3)

Major Concentration Courses

RAD 4300	Advanced Radiologic Technology 1	4
RAD 4303	Radiation Protection—Radiobiology	3
RAD 4304	Cross-Sectional Anatomy	4
RAD 4460	Medical Imaging Quality Assurance	3
Total Quarter Hours		96

*Prerequisite: Satisfactory completion of an accredited certificate program in radiologic technology or registration by the American Registry of Radiologic Technologists.

Therapeutic Recreation Services

Therapeutic recreation is the use of leisure recreation services to improve or maintain physical, mental, emotional, and/or social functioning to assist individuals in expressing independent lifestyles. Comprehensive therapeutic recreation services involve a continuum of care, including

- treatment that uses leisure activities to remediate or rehabilitate functional abilities and to assist in diagnosis;
- leisure education that uses activities to acquire skills, knowledge, and attitudes that facilitate an independent lifestyle and avocational competence; and
- recreation that uses activities to enhance health, growth, development, and independence.

This comprehensive approach uses the needs, interests, and abilities of the client, as well as the mandate of the service agency, to direct the therapeutic recreation services provided.

The Therapeutic Recreation Certificate verifies that a basic level of competence in this field has been attained. The Massachusetts Recreation and Park Association recognizes both the certificate and associate's degree programs in its professional registration plan. The associate's degree program leads to a paraprofessional classification with the National Council for Therapeutic Recreation Certification.

Students in the certificate and associate's degree programs may go on to pursue the bachelor of science degree in health management or sociology in University College, or the bachelor of science in Therapeutic Recreation degree in the undergraduate day program of Northeastern University's Department of Health, Sport, and Leisure Studies.

Therapeutic Recreation Services Activity Leader Certificate Program (Major Code 601)



Core Courses				quarter hours
ENG 4110		Critical Writing 1		3
Major Concentration Courses				
REC 4101	REC 4102	REC 4103	Principles and Practices of Therapeutic Recreation 1, 2, 3	9
REC 4110	REC 4111		Group Dynamics and Leadership 1, 2	6
REC 4500	REC 4501		Practicum 1, 2*	8

Electives*Choose six quarter hours from the following:*

REC 4300	REC 4301	Arts and Crafts 1, 2	(6)
REC 4310		Social Recreation	(3)
REC 4311		Music Therapy	(3)

Choose six quarter hours from the following:

REC 4200		Introduction to Learning Disabilities	(3)
REC 4210		Psychosocial Aspects of Disabilities and Illness	(3)
REC 4250		Assessment of Learning Disabilities	(3)
REC 4304		Dynamics of Family Life for the Disabled	(3)
REC 4350		Legal Issues of Disability and Rehabilitation	(3)
REC 4401		The Nursing Home Experience	(3)
REC 4410		Therapeutic Recreation in Rehabilitation	(3)
REC 4425		Mental Illness and Retardation	(3)
REC 4430		Therapeutic Recreation in Child Development	(3)
REC 4440		Humanistic and Holistic Approaches to Therapeutic Recreation	(3)
REC 4445		Community Recreation for the Handicapped	(3)
REC 4450		Vocational Planning for the Learning Disabled	(3)
REC 4460		The Process of Aging	(3)
REC 4461		Camping for the Disabled	(3)
REC 4462		Leisure Counseling	(3)
REC 4470		The Learning Disabled at Work	(3)

Total Quarter Hours**38**

*See course description for prerequisites; eligibility is determined by the program consultant. Petitions can be obtained in the Health Professions Program office and should be filed at least one quarter in advance of the start of the practicum.

Therapeutic Recreation Services Associate in Science Degree (Major Code 600)



Core Courses				quarter hours
BIO 4103	BIO 4105		Biology 1, 3	8
BIO 4175	BIO 4176	BIO 4177	Human Anatomy and Physiology 1, 2, 3	9
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
HSC 4301	HSC 4302		Mechanisms of Disease 1, 2	6
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
Major Concentration Courses				
REC 4101	REC 4102	REC 4103	Principles and Practices of Therapeutic Recreation 1, 2, 3	9
REC 4110	REC 4111		Group Dynamics and Leadership 1, 2	6
REC 4210			Psychosocial Aspects of Disability and Illness	3
REC 4300	REC 4301		Arts and Crafts 1, 2	6
REC 4310			Social Recreation	3
REC 4425			Mental Illness and Retardation	3
REC 4500	REC 4501		Practicum 1, 2*	8

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Electives*Choose 24 quarter hours from the following:*

REC 4105	Childhood Medical Procedures	(2)
REC 4118	Coping Skills for Child Rearing	(2)
REC 4200	Introduction to Learning Disabilities	(3)
REC 4210	Psychosocial Aspects of Disabilities and Illness	(3)
REC 4215	Causes/Detection of Child Abuse	(3)
REC 4250	Assessment of Learning Disabilities	(3)
REC 4304	Dynamics of Family Life for the Disabled	(3)
REC 4311	Music Therapy	(3)
REC 4312	Media Resources and Techniques	(3)
REC 4313	Therapeutic Use of Dramatics	(3)
REC 4350	Legal Issues of Disability and Rehabilitation	(3)
REC 4378 REC 4379	Parenting Skills 1, 2	(6)
or	or	
REC 4380	Parenting Skills Intensive	(6)
REC 4401	The Nursing Home Experience	(3)
REC 4402	Leisure and Lifestyle	(3)
REC 4403	Concepts of Leisure: Sociopsychological Perspectives	(3)
REC 4405	Management in Mentally Handicapped Residences	(3)
REC 4410	Therapeutic Recreation in Rehabilitation	(3)
REC 4425	Mental Illness and Retardation	(3)
REC 4430	Therapeutic Recreation in Child Development	(3)
REC 4440	Humanistic and Holistic Approaches to Therapeutic Recreation	(3)
REC 4445	Community Recreation for the Handicapped	(3)
REC 4450	Vocational Planning for the Learning Disabled	(3)
REC 4460	The Process of Aging	(3)
REC 4461	Camping for the Disabled	(3)
REC 4462	Leisure Counseling	(3)
REC 4470	The Learning Disabled at Work	(3)

Total Quarter Hours**103**

Preprofessional Medical Courses

The information provided below is for students who plan to apply for admission to schools of medicine, osteopathy, dentistry, podiatry, or optometry. Those who wish to pursue veterinary medicine may need to meet different entrance requirements and should consult the chair of the Health Professions Advisory Committee for additional advice.

Medical School Admission Requirements

Students must complete the following courses before they may enroll in medical school, and should complete them before taking the school's particular admission test (MCAT, DAT, and so on).

Biology	one year (with labs)
General chemistry	one year (with labs)
Organic chemistry	one year (with labs)
Physics	one year (with labs)
College mathematics	one year (with some calculus)
College English	one year

Northeastern University's Health Professions Advisory Committee provides academic advice and help with professional school applications for students in any of the University's health programs. Although advice is available to anyone enrolled in a course, the Committee can prepare evaluation letters only for those who have taken enough course work at Northeastern to be able to have *at least two* Northeastern faculty members write letters to the Committee.

Sources of Advice:

Dr. C. H. Ellis, Jr.

Chair, Health Professions Advisory Committee
Biology Department
Northeastern University
445 Richards Hall
617-437-4032

Professor T. J. McEneaney
Office of Career Development and Placement
Northeastern University
124 Ruggles Building
617-437-2430

Dr. Paula Vosburgh
Director, Health Professions and Sciences Programs
University College
266 Ruggles Building
617-437-2818

Course Sequences to Meet Minimum Admission Requirements

The following list shows acceptable University College course sequences that students can take in preparation for health professional schools. Completing one sequence from each category should meet the *minimum* requirements of most medical or dental schools. If you have questions about whether other courses might be applicable, talk with Dr. Ellis or another member of the Health Professions Advisory Committee.

General Biology	BIO 4103, BIO 4104, BIO 4105—lab <i>must</i> be taken. Other biology work, such as anatomy and physiology and microbiology, may be acceptable, depending on the professional school. General biology is highly recommended even if you have already taken the other courses.
General Chemistry	CHM 4111, CHM 4112, CHM 4113—lab <i>must</i> be taken
Organic Chemistry	CHM 4261, CHM 4262, CHM 4263—lab <i>must</i> be taken
General Physics	PHY 4117, PHY 4118, PHY 4119, and labs PHY 4173, PHY 4174*
Mathematics	MTH 4108, MTH 4120, MTH 4121
English	ENG 4110, ENG 4111, ENG 4112

Two additional areas that are often required are behavioral science and biochemistry. The following courses meet these requirements.

Behavioral Sciences	PSY 4110, PSY 4111, PSY 4112, and/or other psychology courses
Biochemistry	CHM 4371, CHM 4372, CHM 4373 or BIO 4246, BIO 4247, BIO 4248

*These courses are scheduled through the School of Engineering Technology. Call 617-437-2500 for more information.

Liberal Arts Degree Programs

Diane Wald, *Director, Liberal Arts Programs*
 Nancy Bandoian, *Assistant to the Director, Liberal Arts Programs*
 266 Ruggles Building
 617-437-2416, 437-2423

Program Consultants and Advisers

ART: Arts and Graphics

Consultant:

Prof. Peter Serenyi, Dept. of Art & Architecture (College of Arts and Sciences)
 (617-437-2347)

Associate Consultant and Program Adviser:
 Frank Trocki
 (617-437-2390)

ASL: American Sign Language

Consultant and Program Adviser:

Nancy V. Becker, Coordinator, Educational Services, ASL Program (College of Arts and Sciences) (voice 617-437-3064; TTY 617-437-3067)

ECN: Economics

Consultant:

Prof. M. A. Horowitz, Chair, Economics Dept. (College of Arts and Sciences) (617-437-2882)

Associate Consultant:

Prof. H. Goldstein, Executive Officer, Economics Dept. (College of Arts and Sciences) (617-437-2882)

Assistant Consultant/Program Adviser:
 Herbert J. Eskot (617-964-4718)

ENG: English (Literature or Writing)

Consultant:

Prof. M. X. Lesser, English Dept. (College of Arts and Sciences) (617-437-2512)

HST: History

Consultant:

Prof. Raymond H. Robinson, Chair, History Dept. (College of Arts and Sciences)
 (617-437-2660)

Associate Consultant/Program Adviser:

Prof. Gerald H. Herman, History Dept. (College of Arts and Sciences) (617-437-2660)

JRN: Journalism, Public Relations, or Advertising

Consultant and Program Adviser:

Prof. Larue W. Gilleland, Chair, Journalism Dept. (College of Arts and Sciences)
 (617-437-3236)

LN: Modern Languages

Consultant:

Prof. Holbrook Robinson, Chair, Modern Languages Dept. (College of Arts and Sciences) (617-437-2234)

Modern Languages includes the following:

LNA: Arabic	LNJ: Japanese
LNF: French	LNL: Latin
LNG: German	LNN: Swedish
LNH: Hebrew	LNR: Russian
LNI: Italian	LNS: Spanish

MUS: Music

Consultant:

Prof. Joshua R. Jacobson, Music Dept. (College of Arts and Sciences) (617-437-2240)

Associate Consultant/Program Adviser:

Charles Mokotoff, Music Dept. (College of Arts and Sciences) (617-437-2240)

PHL: Philosophy and Religion

Consultant:

Prof. Susan Setta, Philosophy Dept. (College of Arts and Sciences) (617-437-3636)

POL: Political Science

Consultant:

Assoc. Prof. L. Gerald Bursey, Political Science Dept. (College of Arts and Sciences)
 (617-437-2796)

Program Adviser:

Prof. Robert Gilbert, Chair, Political Science Dept. (College of Arts and Sciences)
 (617-437-2796)

PSY: Psychology*Consultant/Program Adviser:*

Prof. Charles Karis, Psychology Dept. (College of Arts and Sciences) (617-437-3076)

Associate Consultant:

Prof. Harold Zamansky, Psychology Dept. (College of Arts and Sciences) (617-437-3076)

SOA: Sociology-Anthropology, and SOC: Sociology*Consultant:*

Prof. Christine Gailey, Sociology Dept. (College of Arts and Sciences) (617-437-2686)

Associate Consultant/Program Adviser:

Prof. Elliot Krause, Sociology Dept. (College of Arts and Sciences) (617-437-2686)

SPC: Speech Communication*Consultant/Program Adviser:*

Prof. Roberta Kosberg, Speech Communications Dept. (College of Arts and Sciences) (617-437-5517)

TCC: Technical Communications*Consultant/Program Adviser:*

Neil F. Duane (Boston Documentation Design) (617-965-5300)

Purpose

Through the liberal arts curricula offered by University College, students are guided in their independent and creative discovery of ideas and methods in the areas of humanities, natural sciences, and social sciences.

University College holds that a liberal arts education enables students to make more intelligent and realistic appraisals of self and career. The Liberal Arts Programs at the college present students with both a challenge to bring meaning and focus to the educational experience and an opportunity to acquire marketable knowledge and skills. As the president of a large corporation put it, "It is no longer enough for management to be well-trained rather than well-educated."

Programs

University College offers bachelor of arts and bachelor of science degrees in art, economics, English, history, political science, psychology, and sociology-anthropology. Unlike the bachelor of science degree, the bachelor of

arts degree includes a language requirement. Bachelor of science degrees are offered in graphic design and visual communication, and technical communications; the technical communications degree includes a professional experience opportunity. In addition, degree programs in English, and sociology-anthropology present professional concentrations designed to teach specialized skills.

Bachelor's Degree in Liberal Studies

University College offers a bachelor of arts degree in liberal studies designed to help students develop communication, analytical, and research skills while exploring the great ideas of the ages as well as contemporary issues. The program's courses are grouped in four areas:

- Communication and Critical Thinking
- Cultural Heritage
- Science, Research, and Quantitative Methods
- Contemporary Studies.

The courses in each area are selected to provide students with a breadth of disciplinary perspectives.

Forty-five quarter hours of elective credits are awarded to allow students to take a certificate program or select individual courses in accordance with their personal and career interests.

Upon approaching completion of individual course work in Cultural Heritage and Contemporary Studies, students take an interdisciplinary seminar in each area to integrate their learning experiences.

Bachelor's Degree in Graphic Design and Visual Communication

In response to the rising demand for professional training in the field of visual communications, University College has introduced a bachelor of science degree program in graphic design and visual communication.

The program has a unique, three-tiered structure that enables students to begin with the certificate program, continue through the associate's program, and finish with the bachelor's program.

Business Administration Minor

Liberal arts bachelor's degree candidates have the option of completing a minor in business administration. Students who elect to do so must apply some of the open electives permit-

ted in their degree programs to this purpose, and should meet with an academic adviser from the Office of Academic and Student Affairs to identify the appropriate courses. These students are permitted to accumulate up to 44 quarter hours (25 percent of the credits toward a bachelor's degree) in business subjects. Business credits accumulated beyond this limit cannot be used to fulfill the graduation requirements for a Bachelor of Science degree in a liberal arts area.

Associate in Science Degree

An associate in science degree program in arts and sciences is offered for those who want a general background in liberal arts, but who do not want to pursue a major field of concentration for the bachelor's degree.

Certificate Programs

Students who seek specialized skills to advance their careers may choose from the following liberal arts certificate programs, which they may take independently or in conjunction with degree study: acting, advertising, American Sign Language and deaf studies, American Sign Language interpreting, business communication, computer graphic design, gerontology, graphic design and visual communication, interpersonal/family communication, music therapy, public relations, technical writing, speech communication, and writing.

Special Studies

University College offers a variety of Special Studies. These courses give students an opportunity to earn credits in Advanced Tutorials, Independent Studies, Honors Programs, and Field Work. Consult descriptions on pages 16-17.

Assessment of Prior Learning Program (APL)

University College students may obtain up to 18 quarter hours of Liberal Arts credit for knowledge gained through prior learning ex-

periences, whether work-related or personal. The primary method for documenting the value of a prior learning experience is through portfolio assessment, although in some instances an exam may be requested. The student, with assistance of an academic adviser, must submit a written narrative, accompanied by documentation, to support his or her claim to prior learning credit for one or more courses. Documentation may include such evidence of accomplishment as published materials, writing samples, or copies of artistic works. Whenever possible, students should link prior learning to University College courses; however, when the appropriate course is also critical to the academic soundness of a program, the student may be required to take the course, but may receive, in addition, APL credit in the related subject area.

The student's application and portfolio will be reviewed by the department consultant and program office who will make a specific credit recommendation.

Students will be permitted to enter the APL program only after all traditional sources of transfer credit have been fully utilized. Students will not receive credit for courses that normally would not transfer to University College. If a course has a CLEP, PEP, or challenge examination available, students will be required to take the exam. Credits earned through the APL program may be applied to certificate programs as transfer credit, within the limit designated for the certificate.

Students are encouraged to apply for APL credit as early as possible in their program. All previous college credits must be transferred and a status report completed by the Office of Academic and Student Affairs before an APL application can be submitted. All portfolio evaluations must be completed six months prior to graduation.

Any student wishing to pursue APL credit should contact an adviser in the Office of Academic and Student Affairs (437-2400) to begin the application procedure.

Arts and Sciences Associate in Science Degree (Major Code 372)

Core Courses			quarter hours
ENG 4110	ENG 4111	Critical Writing 1, 2	6
ENG 4112		Approaches to Literature	3
Major Concentration Courses			
Humanities (ART, ASL, DRA, ENG, JRN, LN, MUS, PHL, SPC, TCC)			24
Math-Science (BIO, CHM, ESC, MTH, PHY)			18
Social Sciences (ECN, HST, POL, PSY, SOA, SOC)			24
Electives			21
Total Quarter Hours			96

Economics Bachelor of Arts Degree (Major Code 390)

Core Courses			quarter hours	
ENG 4110	ENG 4111	Critical Writing 1, 2	6	
ENG 4112		Approaches to Literature	3	
Modern Language		Elementary or Conversational	12	
		Intermediate	12	
Humanities (ART, ASL, DRA, ENG, JRN, LNA to LNS, MUS, PHL, SPC, TCC)			24	
Math-Science (BIO, CHM, ESC, MTH, PHY)			18	
Social Sciences (HST, POL, PSY, SOA, SOC)			18	
Major Concentration Courses				
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4250	ECN 4251	ECN 4252	Statistics 1, 2, 3	9
ECN 4310			Labor Economics	3
ECN 4342	ECN 4343		Money and Banking 1, 2	6
ECN 4344			Government Finance	3
Electives				
Economics			27	
Open electives			24	
Total Quarter Hours			174	

Economics Bachelor of Science Degree with Certificate in Finance (Major Code 390)



Core Courses				quarter hours
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
Social Sciences (HST, POL, PSY, SOA, SOC)				18
Major Concentration Courses				
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
ECN 4215			Macroeconomic Theory	3
ECN 4216			Microeconomic Theory	3
ECN 4250	ECN 4251	ECN 4252	Statistics 1, 2, 3	9
ECN 4310			Labor Economics	3
ECN 4342	ECN 4343		Money and Banking 1, 2	6
ECN 4344			Government Finance	3
Finance Certificate Courses				
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
FI 4301			Principles of Finance	3
FI 4302			Financial Management	3
FI 4310			Investment Principles	3
FI 4320			Credit Principles	3
FI 4325			Budgeting and Planning	3
Electives				
Economics				21
Liberal Arts				42
Open electives				24
Total Quarter Hours				174

English Bachelor of Arts Degree (Major Code 330)



Core Courses			quarter hours
ENG 4110	ENG 4111	Critical Writing 1, 2	6
ENG 4112		Approaches to Literature	3
Modern Language		Elementary or Conversational	12
		Intermediate	12
Math-Science (BIO, CHM, ESC, MTH, PHY)			18
Social Sciences (ECN, HST, POL, PSY, SOA, SOC)			24
Major Concentration Courses			
ENG 4120		English Literature: Faith and Humanism	3
ENG 4121		English Literature: Reason and Romanticism	3
ENG 4122		English Literature: Victorians and Moderns	3
ENG 4123		Early American Literature: Faith, Reason, and Nature	3
ENG 4124		American Romantics and American Realists	3
ENG 4125		American Literature: The Modern Temper	3
ENG 4131		God, Gods, and Heroes: The Literature of the Ancient and Medieval Worlds	3
ENG 4132		Man, Reason, and Imagination: Literature from the Renaissance to the Romantic Age	3
ENG 4133		Order and Disorder: Literature of the Moderns	3
ENG 4349	ENG 4350	Expository and Persuasive Writing 1, 2	6
ENG 4352		Expository Communications	3
ENG 4604*		Major Figures in Literature	6
ENG 4658		Shakespeare the Dramatist	3
<i>Choose one of two concentrations for twenty-seven quarter hours:</i>			
I. Literature			
Select nine courses from the ENG 4200 or ENG 4600 series in the course descriptions on pages 178–181.			
II. Writing			
Choose six courses from the ENG 4300 or ENG 4500 series in the course descriptions on pages 180–181, and three courses from either the JRN or TCC courses on pages 198–199 and 240–241.			
Electives			
English			9
Open electives			18
Total Quarter Hours			174

*Course must be taken twice, focusing on a different figure each time.

English Bachelor of Science Degree (Major Code 330)



Core Courses		quarter hours
ENG 4110	ENG 4111	Critical Writing 1, 2
ENG 4112		Approaches to Literature
Math-Science (BIO, CHM, ESC, MTH, PHY)		18
Social Sciences (ECN, HST, POL, PSY, SOA, SOC)		24

Major Concentration Courses

ENG 4120	English Literature: Faith and Humanism	3
ENG 4121	English Literature: Reason and Romanticism	3
ENG 4122	English Literature: Victorians and Moderns	3
ENG 4123	Early American Literature: Faith, Reason, and Nature	3
ENG 4124	American Romantics and American Realists	3
ENG 4125	American Literature: The Modern Temper	3
ENG 4131	God, Gods, and Heroes: The Literature of the Ancient and Medieval Worlds	3
ENG 4132	Man, Reason, and Imagination: Literature from the Renaissance to the Romantic Age	3
ENG 4133	Order and Disorder: Literature of the Moderns	3
ENG 4349	ENG 4350	Expository and Persuasive Writing 1, 2
ENG 4352		Expository Communications
ENG 4604*		Major Figures in Literature
ENG 4658		Shakespeare the Dramatist

Choose one of two concentrations for twenty-seven quarter hours:

I. Literature

Choose nine courses from the ENG 4200 or ENG 4600 series in the course descriptions on pages 178–181.

II. Writing

Select six courses from the ENG 4300 or ENG 4500 series in the course descriptions on pages 180–181, and three courses from either the JRN or TCC courses on pages 198–199 and 240–241.

Electives

English	9
Open electives	42

Total Quarter Hours	174
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*Course must be taken twice, focusing on a different figure each time.

Fine Arts Bachelor of Arts Degree (Major Code 327)

Core Courses		quarter hours	
ENG 4110	ENG 4111	Critical Writing 1, 2	6
ENG 4112		Approaches to Literature	3
Modern Language		Elementary or Conversational	12
		Intermediate	12
Math-Science (BIO, CHM, ESC, MTH, PHY)			18
Social Sciences (ECN, HST, POL, PSY, SOA, SOC)			24
Major Concentration Courses			
ART 4100		History of Art	3
ART 4101		History of Art to the Sixteenth Century	3
ART 4102		History of Art to the Twentieth Century	3
ART 4106		Introduction to Art	3
ART 4112*		Visual Foundations	3
Electives			
Art			36
Open electives			48
Total Quarter Hours			174

Fine Arts Bachelor of Science Degree (Major Code 327)

Core Courses			quarter hours
ENG 4110	ENG 4111	Critical Writing 1, 2	6
ENG 4112		Approaches to Literature	3
Math-Science (BIO, CHM, ESC, MTH, PHY)			18
Social Sciences (ECN, HST, POL, PSY, SOA, SOC)			24
Major Concentration Courses			
ART 4100		History of Art	3
ART 4101		History of Art to the Sixteenth Century	3
ART 4102		History of Art to the Twentieth Century	3
ART 4106		Introduction to Art	3
ART 4112*		Visual Foundations	3
Electives			
Art			36
Open electives			72
Total Quarter Hours			174

* 3 ½-hour studio

Graphic Design and Visual Communication

Associate in Science Degree (Major Code 362)



Core Courses			quarter hours
Communication			
ENG 4110	ENG 4111	Critical Writing 1, 2	6
ENG 4112		Approaches to Literature	3
PHL 4100		Philosophical Thinking	3
SPC 4101		Fundamentals of Human Communication	3
Social Sciences			
HST 4101		The Civilization of the Ancient and Medieval Worlds	3
HST 4102		The Civilization of the Early Modern World	3
HST 4103		The Civilization of the Modern World	3
SOC 4100		Roles, Culture, and the Individual	3
SOC 4101		Inequality and Institutions	3
Business			
MGT 4101		Introduction to Business and Management 1	3
MKT 4301		Introduction to Marketing 1	3
ACC 4101		Accounting Principles 1	3
Major Concentration Courses			
Art/Graphics			
ART 4105		Art through the Ages	3
ART 4110		Modern Art	3
ART 4121*		Principles of Drawing and Composition	3
ART 4112*		Visual Foundations	3
ART 4175		History of Graphic Design	3
Graphic Design and Communication Certificate			
ART 4135*		Design Foundations and Techniques	3
ART 4139		Color Theory and Practice	3
ART 4140		Graphic Communication and Production	3
ART 4141*	ART 4142*	Graphic Design 1, 2	6
ART 4143*		Advertising Design	3
ART 4151		Typography	3
ART 4251*		Advanced Graphic Design	3
ART 4367		Illustration	3
JRN 4349		Advertising Basics	3
Additional courses in humanities			12
Total Quarter Hours			96

*3 ½-hour studio.

Graphic Design and Visual Communication Bachelor of Science Degree (Major Code 360)



Core Courses				quarter hours
Credits from associate in science degree in graphic design and communication				96
Business Communication and Research				
ENG 4380	ENG 4381	Business Writing and Reports 1, 2		6
SPC 4251		Business and Professional Speaking		3
ECN 4115		Economic Principles and Problems 1		3
MGT 4330		Essentials for Managers of Small Businesses		2
Computer, Math, Science				
COM 4101		Foundations of Computer Literacy		4
MTH 4110	MTH 4111	MTH 4112	Math 1, 2, 3	9
Choose one of the following pairs:				
BIO 4103	BIO 4104	Biology 1, 2		(6)
or		or		
CHM 4111	CHM 4112	General Chemistry 1, 2		(6)
or		or		
ESC 4103		Introduction to Earth Sciences: The Solid Earth		(3)
or		or		
ESC 4104		Introduction to Earth Sciences: The Fluid Earth		(3)
or		or		
PHY 4104	PHY 4105	General Physics 1, 2**		(8)
Major Concentration Courses				
ART 4160*		Basic Photography		3
ART 4176		International Directions in Graphic Design		3
ART 4181*		Introduction to Computer-Aided Graphic Design		3
ART 4182*		Computer-Aided Graphic Design Workshop		3
ART 4183*		Electronic Publishing Design		3
ART 4366		Promotional and Technical Publications: Design and Production		3
ART 4368		Graphic Design for Media		3
ART 4500		Senior Project		3
ART 4501		Portfolio Development		3
Electives**				18
Total Quarter Hours				174-176

*3 ½-hour studio or lab.

**Physics and additional courses in humanities are recommended



History Bachelor of Arts Degree (Major Code 323)

Core Courses		quarter hours
ENG 4110	ENG 4111	Critical Writing 1, 2
ENG 4112		Approaches to Literature
Modern Language		Elementary or Conversational
		Intermediate
Humanities (ART, ASL, DRA, ENG, JRN, LN, MUS, PHL, SPC, TCC)		
Math-Science (BIO, CHM, ESC, MTH, PHY)		
Social Sciences (in three of the following areas: ECN, POL, PSY, SOA, SOC)		
Major Concentration Courses		
Introductory Courses		
HST 4101	The Civilization of the Ancient and Medieval Worlds	
HST 4102	The Civilization of the Early Modern World	
HST 4103	The Civilization of the Modern World	
HST 4201	American History 1763-1848	
HST 4202	American History 1848-1917	
HST 4203	American History Since 1917	
Historical Skill Requirement		
HST 4241	The Historian's Craft	
HST 4265	Introduction to Public History	
Regional Distribution		
<i>Choose one course from each of the following three regional groupings:</i>		
European: any course with a HST 44 prefix		
American: any course with a HST 45 prefix		
Other: any course with a HST 46 prefix		
Thematic Distribution		
<i>Choose four courses from one of the following groups A–E, or choose Group F:</i>		
Group A: America's Ethnic Roots (HST 4404, 4434, 4435, 4455, 4466, 4467, 4501, 4543, 4602, 4604, 4611, 4632, 4636)		(12)
Group B: America's Social and Economic History (HST 4530, 4540, 4542, 4546, 4547, 4548)		(12)
Group C: Contemporary History (HST 4424, 4425, 4460, 4468, 4469, 4513, 4549, 4602, 4603, 4611, 4622, 4644, 4645, 4646)		(12)
Group D: Technological History (HST 4301, 4302, 4303, 4304, 4305)		(12)
Group E: Women and Family History (HST 4434, 4435, 4540, 4542, 4640, 4641)		(12)
Group F: Honors (HST 4811, 4812, 4813)		(12)
Electives		36
Total Quarter Hours		174

History Bachelor of Science Degree (Major Code 323)



Core Courses				quarter hours
ENG 4110	ENG 4111	Critical Writing 1, 2		6
ENG 4112			Approaches to Literature	3
MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2		6
SOC 4331	SOC 4332	SOC 4333	Social Research Methods 1, 2, 3	9
Humanities (ART, ASL, DRA, ENG, JRN, LN, MUS, PHL, SPC, TCC)				24

Social Sciences

Choose two sequences of three courses from the following:

ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	(9)
POL 4103	Introduction to Politics			(3)
POL 4104	Introduction to American Government			(3)
POL 4105	Introduction to Comparative Politics			(3)
PSY 4110	Introduction to Psychology: Fundamental Issues			(3)
PSY 4111	Introduction to Psychology: Developmental Aspects			(3)
PSY 4112	Introduction to Psychology: Personal Dynamics			(3)
SOA 4100	Physical Anthropology			(3)
SOA 4101	Cultural Anthropology: Preliterate Societies			(3)
SOA 4102	Cultural Anthropology: Industrial Societies			(3)
SOC 4100	Roles, Culture, and the Individual			(3)
SOC 4101	Inequality and Institutions			(3)
SOC 4102	Institutions and Social Change			(3)

Major Concentration Courses

Introductory Courses

HST 4101	The Civilization of the Ancient and Medieval Worlds	3
HST 4102	The Civilization of the Early Modern World	3
HST 4103	The Civilization of the Modern World	3
HST 4201	American History 1764-1848	3
HST 4202	American History 1848-1917	3
HST 4203	American History since 1917	3

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Historical Skill Requirement

HST 4241	The Historian's Craft	3
HST 4265	Introduction to Public History	3
HST 4263	Oral History	3
HST 4821	Field Work in History (or related NCE credit)	6

Regional Distribution

Choose one course from each of the following regional groupings:

European: any course with a HST 44 prefix	3
American: any course with a HST 45 prefix	3
Other: any course with a HST 46 prefix	3

Thematic Distribution

Choose four courses from one of the following groups A–E, or choose Group F:

Group A: America's Ethnic Roots (HST 4404, 4434, 4435, 4455, 4466, 4467, 4501, 4543, 4602, 4604, 4611, 4632, 4636)	(12)
Group B: America's Social and Economic History (HST 4530, 4540, 4542, 4546, 4547, 4548)	(12)
Group C: Contemporary History (HST 4424, 4425, 4460, 4468, 4469, 4513, 4549, 4602, 4603, 4611, 4622, 4644, 4645, 4646)	(12)
Group D: Technological History (HST 4301, 4302, 4303, 4304, 4305)	(12)
Group E: Women and Family History (HST 4434, 4435, 4540, 4542, 4640, 4641)	(12)
Group F: Honors (HST 4811, 4812, 4813)	(12)

Electives (preferably other than history)	54
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Total Quarter Hours	174
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Bachelor of Arts in Liberal Studies Degree (Major Code 495)**Core Courses****quarter hours****Communication and Critical Thinking**

ENG 4110	ENG 4111	Critical Writing 1, 2	6
ENG 4112		Approaches to Literature	3
INT 4200		The Creative Process	3
PHL 4100		Philosophical Thinking	3
PHL 4105		Philosophy of Knowing and Reality	3
PHL 4200		Logic	3
SPC 4101		Fundamentals of Human Communication	3
SPC 4102		Group Discussion	3
SPC 4251		Business and Professional Speaking	3

Cultural Heritage

ART 4105		Art through the Ages	3
ECN 4137		History of Economic Thought	3
ENG 4131		God, Gods, and Heroes: Literature of the Ancient and Medieval Worlds	3
ENG 4132		Man, Reason, and Imagination: Literature from the Renaissance to the Romantic Age	3
ENG 4133		Order and Disorder: Literature of the Moderns	3
HST 4101		The Civilization of the Ancient and Medieval Worlds	3
HST 4102		The Civilization of the Early Modern World	3
HST 4103		The Civilization of the Modern World	3
INT 4201		Cultural Heritage Seminar	3
MUS 4120		History of Musical Styles	3
POL 4110		The Great Political Thinkers	3

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Science, Research, and Quantitative Methods

CHM 4105			Chemistry and the Environment	3
ECN 4250	ECN 4251		Statistics 1, 2	6
ESC 4680			Science, Technology, and Ancient Societies	3
ESC 4681			Science, Technology, and Modern Societies	3
ENG 4381			Business Writing and Reports 2	3
MIS 4101	MIS 4102		Introduction to Data Processing and Information Systems 1, 2	6
MTH 4110	MTH 4111	MTH 4112	Math 1, 2, 3	9

Contemporary Studies

ECN 4115	ECN 4116	Economic Principles and Problems 1, 2	6
ECN 4334		Comparative Economic Systems	3
POL 4105		Introduction to Comparative Politics	3
PSY 4110		Introduction to Psychology: Fundamental Issues	3
PSY 4111		Introduction to Psychology: Developmental Aspects	3
SOA 4155		Individual and Culture	3
SOC 4100		Roles, Culture, and the Individual	3
SOC 4101		Inequality and Institutions	3
SOC 4102		Institutions and Social Change	3
INT 4202		Contemporary Studies Seminar	3

Electives 45

Electives may be used

- to take a University College certificate program
- to study a modern language or other area in greater depth
- to study areas of personal or career interest

Students are encouraged to make an appointment with a University College counselor for help in selecting electives. Call 617-437-2400 for an appointment.

Total Quarter Hours**174**

Political Science Bachelor of Arts Degree (Major Code 322)



Core Courses

quarter hours

ENG 4110	ENG 4111	Critical Writing 1, 2	6
ENG 4112		Approaches to Literature	3
Modern Language		Elementary or Conversational	12
		Intermediate	12
Humanities (ART, ASL, DRA, ENG, JRN, LN, MUS, PHL, SPC, TCC)			24
Math-Science (BIO, CHM, ESC, MTH, PHY)			18
Social Sciences (in three of the following areas: ECN, HST, PSY, SOA, SOC)			18

Major Concentration Courses

POL 4103	Introduction to Politics	3
POL 4104	Introduction to American Government	3
POL 4105	Introduction to Comparative Politics	3
POL 4331	International Relations	3
POL 4370	Introduction to Political Theory	3

American Government

Choose three of the following:

POL 4310	American Political Thought	(3)
POL 4313	State and Local Government	(3)
POL 4314	Urban and Metropolitan Government	(3)
POL 4318	The American Presidency	(3)
POL 4319	The Legislative Process	(3)
POL 4320	American Constitutional Law	(3)
POL 4321	Civil Liberties	(3)
POL 4322	Procedural Due Process	(3)

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Comparative Government

Choose two of the following:

POL 4330	Comparative Politics	(3)
POL 4338	European Political Parties	(3)
POL 4339	Government and Politics in the Soviet Union	(3)
POL 4342	Communism in Eastern Europe	(3)
POL 4350	Politics and Policies of the Developing Nations	(3)
POL 4352	Government and Politics of Latin America	(3)
POL 4356	Government and Politics of Northern Africa	(3)
POL 4357	Government and Politics of South Africa	(3)
POL 4359	Government and Politics in the Middle East	(3)
POL 4362	Government and Politics of Southeast Asia	(3)
POL 4365	Government and Politics of China	(3)
POL 4367	Government and Politics of Japan	(3)

International Relations

Choose one of the following:

POL 4332	International Organization	(3)
POL 4333	International Law	(3)
POL 4335	Formulating American Foreign Policy	(3)
POL 4336	American Foreign Policy	(3)
POL 4341	Soviet Foreign Policy	(3)
POL 4364	China's Foreign Policy	(3)

Theory and Methodology

Choose one of the following:

POL 4371	Contemporary Political Theory	(3)
POL 4311	Research Methods	(3)

Electives

Political science	18
Open electives	27
Total Quarter Hours	174

Political Science Bachelor of Science Degree (Major Code 322)



Core Courses

quarter hours

ENG 4110	ENG 4111	Critical Writing 1, 2	6
ENG 4112		Approaches to Literature	3
ECN 4250	ECN 4251	Statistics 1, 2	6
MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6
Humanities (ART, ASL, DRA, ENG, JRN, LN, MUS, PHL, SPC, TCC)			12
Social Sciences (in three of the following areas: ECN, HST, PSY, SOA, SOC)			18

Choose one of the following:

MIS 4221	COBOL Programming 1	(3)
MIS 4240	Introduction to Programming in BASIC	(3)
MIS 4250	FORTTRAN Programming 1	(3)
MIS 4270	Pascal Programming 1	(3)

Major Concentration Courses

POL 4103	Introduction to Politics	3
POL 4104	Introduction to American Government	3
POL 4105	Introduction to Comparative Politics	3
POL 4331	International Relations	3
POL 4370	Introduction to Political Theory	3

American Government

Choose three of the following:

POL 4310	American Political Thought	(3)
POL 4313	State and Local Government	(3)
POL 4314	Urban and Metropolitan Government	(3)
POL 4318	The American Presidency	(3)
POL 4319	The Legislative Process	(3)
POL 4320	American Constitutional Law	(3)
POL 4321	Civil Liberties	(3)
POL 4322	Procedural Due Process	(3)

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Comparative Government

Choose two of the following:

POL 4330	Comparative Politics	(3)
POL 4338	European Political Parties	(3)
POL 4339	Government and Politics in the Soviet Union	(3)
POL 4342	Communism in Eastern Europe	(3)
POL 4350	Politics and Policies of the Developing Nations	(3)
POL 4352	Government and Politics of Latin America	(3)
POL 4356	Government and Politics of Northern Africa	(3)
POL 4357	Government and Politics of South Africa	(3)
POL 4359	Government and Politics in the Middle East	(3)
POL 4362	Government and Politics of Southeast Asia	(3)
POL 4365	Government and Politics of China	(3)
POL 4367	Government and Politics of Japan	(3)

International Relations

Choose one of the following:

POL 4332	International Organization	(3)
POL 4333	International Law	(3)
POL 4335	Formulating American Foreign Policy	(3)
POL 4336	American Foreign Policy	(3)
POL 4341	Soviet Foreign Policy	(3)
POL 4364	China's Foreign Policy	(3)

Theory and Methodology

Choose one of the following:

POL 4371	Contemporary Political Theory	(3)
POL 4311	Research Methods	(3)

Electives

Political science	18
Open electives	66

Total Quarter Hours	174
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Psychology Bachelor of Arts Degree (Major Code 319)



Core Courses			quarter hours	
ENG 4110	ENG 4111	Critical Writing 1, 2	6	
ENG 4112		Approaches to Literature	3	
Modern Language		Elementary or Conversational	12	
		Intermediate	12	
Humanities (ART, ASL, DRA, ENG, JRN, LN, MUS, PHL, SPC, TCC)			24	
Math-Science (BIO, CHM, ESC, MTH, PHY)			18	
Social Sciences (in three of the following areas: ECN, HST, POL, SOA, SOC)			18	
Major Concentration Courses				
PSY 4110		Introduction to Psychology: Fundamental Issues	3	
PSY 4111		Introduction to Psychology: Developmental Aspects	3	
PSY 4112		Introduction to Psychology: Personal Dynamics	3	
PSY 4220	PSY 4221	PSY 4222	Statistics in Psychology 1, 2, 3	9
PSY 4231		Psychology of Learning 1	3	
PSY 4272		Personality 1	3	
PSY 4351		Physiological Psychology 1	3	
PSY 4381		Sensation and Perception 1	3	
PSY 4561	PSY 4562		Experimental Psychology 1, 2	6
PSY 4611		Senior Seminar in Psychology	3	
Electives				
Psychology			21	
Open electives			21	
Total Quarter Hours			174	



Psychology Bachelor of Science Degree (Major Code 319)

Core Courses			quarter hours	
ENG 4110	ENG 4111	Critical Writing 1, 2	6	
ENG 4112		Approaches to Literature	3	
Math-Science (BIO, CHM, ESC, MTH, PHY)			30	
Major Concentration Courses				
PSY 4110		Introduction to Psychology: Fundamental Issues	3	
PSY 4111		Introduction to Psychology: Developmental Aspects	3	
PSY 4112		Introduction to Psychology: Personal Dynamics	3	
PSY 4220	PSY 4221	PSY 4222	Statistics in Psychology 1, 2, 3	9
PSY 4231			Psychology of Learning 1	3
PSY 4272			Personality 1	3
PSY 4351			Physiological Psychology 1	3
PSY 4381			Sensation and Perception 1	3
PSY 4561	PSY 4562		Experimental Psychology	6
PSY 4611			Senior Seminar in Psychology 1	3
Electives				
Psychology			21	
Open electives			75	
Total Quarter Hours			174	

Sociology-Anthropology Bachelor of Arts Degree (Major Code 321)



Core Courses				quarter hours
ENG 4110	ENG 4111	Critical Writing 1, 2		6
ENG 4112		Approaches to Literature		3
Modern Language		Elementary or Conversational		12
		Intermediate		12
Humanities (ART, ASL, DRA, ENG, JRN, LN, MUS, PHL, SPC, TCC)				24
Math-Science (BIO, CHM, ESC, MTH, PHY)				18
Social Sciences (in three of the following areas: ECN, HST, POL, PSY)				18
Major Concentration Courses				
SOA 4100		Physical Anthropology		3
SOA 4101		Cultural Anthropology: Preliterate Societies		3
SOA 4102		Cultural Anthropology: Industrial Societies		3
SOC 4100		Roles, Culture, and the Individual		3
SOC 4101		Inequality and Institutions		3
SOC 4102		Institutions and Social Change		3
SOC 4300	SOC 4301	SOC 4302	Social Theory 1, 2, 3	9
SOC 4331	SOC 4332	SOC 4333	Social Research Methods 1, 2, 3	9
Electives				
Sociology-Anthropology (at least nine quarter hours in SOA)				21
Open electives				24
Total Quarter Hours				174

Sociology-Anthropology Bachelor of Science Degree (Major Code 321)

Core Courses				quarter hours
ENG 4110	ENG 4111		Critical Writing 1, 2	6
ENG 4112			Approaches to Literature	3
Social Sciences (ECN, HST, POL, PSY)				18
Major Concentration Courses				
SOA 4100			Physical Anthropology	3
SOA 4101			Cultural Anthropology: Preliterate Societies	3
SOA 4102			Cultural Anthropology: Industrial Societies	3
SOC 4100			Roles, Culture, and the Individual	3
SOC 4101			Inequality and Institutions	3
SOC 4102			Institutions and Social Change	3
SOC 4300	SOC 4301	SOC 4302	Social Theory 1, 2, 3	9
SOC 4331	SOC 4332	SOC 4333	Social Research Methods 1, 2, 3	9
Electives*				
Sociology-anthropology (at least nine quarter hours in SOA)				39
Open electives (preferably in the humanities and math-science)				72
Total Quarter Hours				174

*Students may use these electives to take the Human Services Concentration or the Gerontology Certificate Program.
See pages 36, 142 for certificate program requirements.

Human Services Elective Concentrations (open only to B.S. degree candidates)

				quarter hours
SOC 4125			Social Problems	3
SOC 4240			Sociology of Human Service Organizations	3
SOC 4241			Human Services Professions	3
SOC 4245			Poverty and Inequality	3
SOC 4260	SOC 4261	SOC 4262	Introduction to Social Work Practice 1, 2, 3	9
PSY 4110			Introduction to Psychology: Fundamental Issues	3
PSY 4111			Introduction to Psychology: Developmental Aspects	3
PSY 4112			Introduction to Psychology: Personal Dynamics	3
PSY 4372	PSY 4373	PSY 4374	Abnormal Psychology 1, 2, 3	9
Total Quarter Hours				39
Recommended Electives for Human Services Concentration Students:				
ECN 4130			Medical Economics	3
ECN 4311			Human Resource Planning	3
ECN 4315			Income Inequality and Discrimination	3
POL 4300			Introduction to Public Administration	3
POL 4301			Case Studies in Public Administration	3
POL 4306			Public Policy Analysis	3
POL 4321			Civil Liberties	3
PSY 4240			Development: Infancy and Childhood	3
PSY 4241			Development: Adolescence	3
PSY 4242			Development: Adulthood and Aging	3
PSY 4272			Personality 1	3
SOC 4170			Race and Ethnic Relations	3
SOC 4185			Sociology of Deviant Behavior	3
SOC 4186			Social Control	3
SOC 4190			Juvenile Delinquency	3
SOC 4215			Medical Sociology	3
SOC 4220			Sociology of Mental Health	3
SOC 4225			Social Gerontology	3

Technical Communications Bachelor of Science Degree (Major Code 380)



Core Courses quarter hours

Advanced Standing Credit, including ENG 4110, ENG 4111, ENG 4112 or their equivalents 83

Basic Communication

ART 4140		Graphic Communication and Production	3
PHL 4100		Philosophical Thinking	3
PHL 4200		Logic	3
ENG 4349	ENG 4350	Expository and Persuasive Writing 1, 2	6
ENG 4381		Business Writing and Reports 2	3
JRN 4112		Writing for Media	3
SPC 4152		Interviewing	3

Technology

MIS 4101	MIS 4102	Introduction to Data Processing and Information Systems 1, 2	6
MTH 4107		College Algebra	4
PHY 4101	PHY 4102	College Physics 1, 2	8
PHY 4173	PHY 4174	Physics Lab 1, 2	4

Choose one of the following:

MIS 4220		Introduction to Programming in COBOL	(3)
MIS 4250		FORTTRAN Programming 1	(3)
MIS 4270		Pascal Programming 1	(3)

Major Concentration Courses

TCC 4101	TCC 4102	Technical Writing 1, 2	6
TCC 4105		Editing for Science and Technology	3
TCC 4340		Technical Writing Portfolio Development	3

Choose four of the following:

TCC 4110		Technical-Promotional Writing	(3)
TCC 4301	TCC 4302	Computer Software Technical Writing 1, 2	(6)
TCC 4311	TCC 4312	Instruction Manual Writing 1, 2	(6)
TCC 4320		Proposal Writing	(3)
TCC 4330		The Business and Technical Presentation	(3)

Electives 18

The following electives are recommended:

ACC 4101	ACC 4102	Accounting Principles 1, 2	(6)
ART 4366		Promotional and Technical Publications: Design and Production	(3)
ENG 4352		Expository Communications	(3)
MGT 4101	MGT 4102	Introduction to Business and Management 1, 2	(6)
TCC 4805		Field Work in Technical Communications	(6)

Total Quarter Hours 174

Alternative Freshman-Year Program

Richard Wilson, *Manager,*
Alternative Freshman-Year Program
250 Ruggles Building
617-437-4626

Program Goals

Students in the Alternative Freshman-Year Program are considered full-time day students and are degree candidates with an undeclared major. The program is designed to help students strengthen their basic skills in writing and mathematics. While helping them gain confidence in their ability to do college-level work, the program also offers students an opportunity to consider several areas of study before committing themselves to a specific major. Through the combination of a carefully prescribed curriculum and the attention of professional counselors, each student is helped to establish a program suited to his or her individual needs. These same counselors are normally available throughout the student's entire freshman year.

Program Structure

Students in the Alternative Freshman-Year Program normally take sixteen quarter hours of credit during each of their three freshman quarters, but may take 12 quarter hours during the first quarter and still be considered full-time students. Students in the health science track take seventeen quarter hours in their third quarter and twelve quarter hours in their fourth quarter.

After completing the prescribed Alternative Freshman-Year Program and achieving both a cumulative quality-point average of 1.400 or better and specific program requirements as noted, students may generally continue their degree programs by transferring with sophomore status, to any program in the College of Business Administration or the College of Criminal Justice as well as certain nonscience programs in the Boston-Bouve College of Human Development Professions and the College of Arts and Sciences. Students may also continue their degree programs within University College. In addition to the cumulative quality-point average of 1.400 or better, the College of Business Administration requires a 1.800 average in 5 key courses, namely, MTH 1113, ENG 4013, ENG 4014, ECN 4601, and MGT 4110. Additional program requirements for students who seek sophomore status in the College of Pharmacy and Allied Health Professions are listed in the *Student Handbook for Basic Colleges*.

Faculty and Resources

For the Alternative Freshman-Year Program, the University has carefully selected faculty members who are aware of the individual needs and goals of students working to adjust to a college program. Faculty and students meet in small classes of not more than twenty-five students.

As members of the program, students are considered regular Northeastern University day students even though they have unique schedules and a distinctively tailored curriculum. Therefore, they generally have access to all counseling services, physical education facilities, dormitory arrangements, and extracurricular programs at the University's main campus in Boston.

Alternative Freshman-Year students are encouraged to make extensive use of the up-to-date, programmed learning resources available for self-instruction through Northeastern's Learning Resources Center. For additional assistance, these students are also frequently referred to the Academic Assistance Center or the Math/Writing Center. A third and very important resource, the Counseling and Testing Center, is also available to students for personal and academic counseling as well as for vocational testing and counseling.

Tuition and Fees

Tuition and fees for the Alternative Freshman-Year Program are the same as for students in the Basic Day Colleges. Payment of the standard tuition during the first three academic quarters of residence entitles students to forty-eight credit hours of instruction. Thus, those who take the forty-four programmed credits are entitled to a four-quarter-hour tuition adjustment at the regular freshman rate.

Application Procedures

For more information on the Alternative Freshman-Year Program, or to request an application, write or call the Dean of Admissions, Department of Admissions, Northeastern University, 360 Huntington Avenue, Boston, MA 02115, 617-437-2200.

Sample One-Year Program: Business Track

Quarter 1		quarter hours
ED 4003	Integrated Language Skills A	4
ENG 4013	Fundamentals of English 1	4
MTH 1000	Mathematical Preliminaries 1*	4
HST 4110	History of Civilization A†	(4)
or	or	
ECN 4601	Economics 1**	(4)
or	or	
MGT 4110	Survey of Business and Management**	(4)
Total Quarter Hours		12-16
Quarter 2		
ED 4004	Integrated Language Skills B	4
ENG 4014	Fundamentals of English 2	4
MTH 1010	Mathematical Preliminaries 2*	4
HST 4110	History of Civilization A	(4)
or	or	
MGT 4110	Survey of Business and Management**	(4)
or	or	
ECN 4601	Economics 1**	(4)
Total Quarter Hours		16
Quarter 3		
ECN 4601	Economics 1 (or Directed Elective)**	4
HST 4111	History of Civilization B	4
MGT 4110	Survey of Business and Management (or Directed Elective)	4
MTH 1113	Mathematics for Business*	4
Total Quarter Hours		16

* Students will be placed in one of three math courses depending on placement test results. Those receiving advanced placement have the option of completing MTH 1114 during freshman year.

† Eligible students may take HST 4110 in the first quarter; all others take HST 4110 in the second quarter.

** Business Track students may be assigned to ECN 4601 or MGT 4110 in any quarter, but all are required to complete both courses by the third quarter.

Sample One-Year Program: Criminal Justice, Education, Arts and Sciences Track

Quarter 1		quarter hours
ED 4003	Integrated Language Skills A	4
ENG 4013	Fundamentals of English 1	4
MTH 1000	Mathematical Preliminaries 1*	4
SOC 4010	Principles of Sociology 1	(4)
Total Quarter Hours		12-16
Quarter 2		
ED 4004	Integrated Language Skills B	4
ENG 4014	Fundamentals of English 2	4
HST 4110	History of Civilization A†	4
SOC 4011	Principles of Sociology 2	(4)
or	or	
MTH 1010	Mathematical Preliminaries 2	(4)
Total Quarter Hours		16
Quarter 3		
HST 4111	History of Civilization B	4
POL 4106	Introduction to Politics	4
SOC 4011	Principles of Sociology 2 (or Directed Elective)	4
Directed Elective‡		4
Total Quarter Hours		16

*Students will be placed in one of two math levels, depending on placement test results.

†Eligible students may take HST 4110 in the first quarter, followed by an elective in the second quarter. Most students will take HST 4110 in the second quarter.

‡The Directed Elective is to be chosen with consideration for the student's intended major.

Sample One-Year Program: Health Sciences Track

Quarter 1		quarter hours
MTH 1010	Mathematical Preliminaries 2	4
ENG 4013	Fundamentals of English 1	4
CHM 1110	Pre-Chemistry	5
ED 4001	Integrated Language Skills Development 1	2
Total Quarter Hours		15
Quarter 2		
MTH 1106	Fundamentals of Mathematics	4
CHM 1111	General Chemistry 1	5
ED 4002	Integrated Language Skills Development 2	2
ENG 4014	Fundamentals of English 2	4
Total Quarter Hours		15
Quarter 3		
BIO 1140	Basic Animal Biology 1	4
CHM 1122	General Chemistry 2	5
ENG 1111	Freshman English 2	4
Directed Elective		4
Total Quarter Hours		17
Quarter 4		
BIO 1141	Basic Animal Biology 2	4
MTH 1107	Functions and Calculus	4
Directed Elective		4
Total Quarter Hours		12

Course Descriptions

Course Descriptions

Not all the courses listed in this bulletin are offered every year.

A final list of courses to be offered is contained in the University College *Schedule Guide*, which gives the hours and days that classes meet and their locations. These schedules are issued prior to the fall, winter, spring, and summer quarters.

Abbreviations

q.h.: quarter hours (credit earned)

cl.: hours required in class per week

Prereq.: Prerequisite

Key to Department Codes

ACC	Accounting
ART	Art and Graphics
ASL	American Sign Language
BIO	Biology
BL	Business Law
CHM	Chemistry
CJ	Criminal Justice and Security
COM	Computer Literacy
DRA	Drama
ECN	Economics
ED	Educational Skills
EMS	Emergency Medical Science
ENG	English
ESC	Earth Sciences

FI	Finance
HMG	Health Management
HRA	Health Record Administration
HRM	Human Resources Management
HSC	Health Science
HST	History
HTL	Hotel and Restaurant Management
IM	Industrial Management
INT	Interdisciplinary
JRN	Journalism
LNA	Language—Arabic
LNF	Language—French
LNG	Language—German
LNH	Language—Hebrew
LNI	Language—Italian
LNJ	Language—Japanese
LNL	Language—Latin
LNN	Language—Swedish
LNR	Language—Russian
LNS	Language—Spanish
MGT	Management
MIS	Management Information Systems
MKT	Marketing
MLS	Medical Laboratory Science
MS	Management Science
MTH	Mathematics
MUS	Music
NUR	Nursing
PED	Cardiovascular Health and Exercise
PHL	Philosophy and Religion
PHY	Physics
POL	Political Science
PSY	Psychology
PUR	Purchasing
RAD	Radiologic Technology
RE	Real Estate
REC	Recreation
SOA	Sociology-Anthropology
SOC	Sociology
SPC	Speech Communication
TCC	Technical Communications
TRN	Transportation

ACCOUNTING

ACC 4101 Accounting Principles 1 (3 q.h.)

Study of accounting issues and objectives for proper preparation and interpretation of financial statements. Covers the nature, function, and environment of accounting, the basic accounting model, and the accounting cycle, while emphasizing accounting for service and merchandising businesses. Also covers cash and accounts receivable.

ACC 4102 Accounting Principles 2 (3 q.h.)

Continuation of ACC 4101. Emphasizes issues in financial reporting, valuation, and income measurement. Includes inventories, plant and equipment, bonds, stockholders' equity, and changes in financial position. *Prereq.* ACC 4101.

ACC 4103 Accounting Principles 3 (3 q.h.)

Preparation and interpretation of cost accounting information and its use in the managerial decision-making process. Includes ratio analysis, present value, analysis of cost-volume relationships, fixed and variable costs, break-even analysis, job order, and process cost systems. *Prereq.* ACC 4102.

ACC 4105 Accounting Principles 1 and 2 (Intensive) (6 q.h.)

Same as ACC 4101 and ACC 4102.

ACC 4120 Essentials of Personal Income Taxation (3 q.h.)

Special course for nonaccounting majors, designed to teach important aspects of personal income taxation on both federal and state levels. Tax laws, tax planning, and the preparation of individual returns are emphasized.

ACC 4301 Intermediate Accounting 1 (Open) (3 q.h.)

Introduction to financial accounting concepts, techniques, and procedures. Areas of intensive treatment are the development and framework of accounting theory, basic financial statements, and cash and receivables. *Prereq.* ACC 4103.

ACC 4302 Intermediate Accounting 2 (Open) (3 q.h.)

Continuation of the study of accounting concepts and procedures. Detailed examination of inventories, tangible and intangible assets, and depreciation. *Prereq.* ACC 4301 or ACC 4401.

ACC 4303 Intermediate Accounting 3 (Open) (3 q.h.)

Comprehensive examination of stockholders' equity and earnings per share. Other topics include accounting changes and statements of cash flow. *Prereq.* ACC 4302 or ACC 4402.

ACC 4310 Cost Accounting 1 (Open) (3 q.h.)

Introduction to cost accounting, including terminology, purpose, and relationship to financial accounting. Familiarizes students

with product costing systems and their usefulness. *Prereq.* ACC 4103.

ACC 4320 Advanced Accounting 1 (3 q.h.)

Problems associated with business combinations. A study of the purchase and pooling methods of consolidations. *Prereq.* ACC 4304 or 4404.

ACC 4321 Advanced Accounting 2 (3 q.h.)

Accounting problems associated with partnerships and multinational corporations. Examines accounting for nonprofit organizations. *Prereq.* ACC 4320.

ACC 4400 Accounting Information Systems (Reserved) (3 q.h.)

Examines the fundamentals of computer-based technology and the basic accounting system concepts. Examines the fundamentals of central systems and design and implementation issues. *Prereq.* 4103 and 80 q.h.

ACC 4401 Intermediate Accounting 1 (Reserved) (3 q.h.)

Introduction to financial accounting concepts, techniques, and procedures. Areas of intensive treatment are the development and framework of accounting theory, basic financial statements, and cash and receivables. *Prereq.* ACC 4103 and 80 q.h.

ACC 4402 Intermediate Accounting 2

(Reserved) (3 q.h.)

Continuation of the study of accounting concepts and procedures. Detailed examination of inventories, tangible and intangible assets, and depreciation. *Prereq.* ACC 4401 or ACC 4301 and 80 q.h.

ACC 4403 Intermediate Accounting 3 (Reserved) (3 q.h.)

Comprehensive examination of stockholders' equity and earnings per share. Other topics include accounting changes and statements of cash flow. *Prereq.* ACC 4402 or ACC 4302 and 80 q.h.

ACC 4404 Intermediate Accounting 4 (Reserved) (3 q.h.)

In-depth analysis of such topics as deferred income taxes, pensions, leases, and price-level accounting. *Prereq.* ACC 4403 or ACC 4303 and 80 q.h.

ACC 4410 Cost Accounting 1 (Reserved) (3 q.h.)

Introduction to cost accounting, including terminology, purpose, and relationship to financial accounting. Familiarizes students with product costing systems and their usefulness. *Prereq.* ACC 4103 and 80 q.h.

ACC 4411 Cost Accounting 2 (Reserved) (3 q.h.)

Budgetary planning and control, with emphasis on the use of cost data for current operations, special decisions, and long-range planning. *Prereq.* ACC 4410 or ACC 4310 and 80 q.h.

ACC 4425 Auditing 1 (Reserved) (3 q.h.)

Auditing concepts and standards relevant to the attest function. Includes ethical responsibilities of the independent certified public accountant, internal controls, an overview of sampling, and auditor reports. *Prereq.* ACC 4403 or ACC 4303 and 80 q.h.

ACC 4426 Auditing 2 (Reserved) (3 q.h.)

Continued examination of auditing concepts and standards relevant to the attest function. Includes compliance and substantive tests as they relate to specific transaction cycles and the use of EDP and statistical sampling techniques. *Prereq.* ACC 4425.

ACC 4440 Federal Income Taxes 1 (Reserved) (3 q.h.)

Application of federal tax laws to the individual's income, gains, losses, and expenses. Includes study of the individual's itemized deductions. *Prereq.* ACC 4403 or ACC 4303 and 80 q.h.

ACC 4441 Federal Income Taxes 2 (Reserved) (3 q.h.)

Continuation of ACC 4440. Property transactions, including non-taxable transactions; fundamental tax law relating to corporate formation and operation, partnerships, and S corporations. *Prereq.* ACC 4440.

ACC 4442 Federal Income Taxes 3 (Reserved) (3 q.h.)

Continuation of ACC 4441. Covers application of federal tax laws to estates, gifts, and trusts; and corporate and partnership taxation. *Prereq.* ACC 4441.

ACC 4600 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 q.p.a.

ACC 4601 Honors Program 2 (4 q.h.)

See ACC 4600.

ACC 4602 Honors Program 3 (4 q.h.)

See ACC 4600.

ACC 4701 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

ACC 4702 Independent Study 2 (3 q.h.)

See ACC 4701.

ACC 4703 Independent Study 3 (3 q.h.)

See ACC 4701.

ACC 4800 Advanced Tutorial 1 (3 q.h.)

Opportunity to take upper level course independently. See page 16 for details. *Prereq.* 87 q.h.

ACC 4801 Advanced Tutorial 2 (3 q.h.)

See ACC 4800.

ACC 4900 Field Work (6 q.h.)

Opportunity to enhance career development

by applying academic background to practical problems in the workplace. See page 16 for details. *Prereq.* Approval of Program Director.

ART and GRAPHICS**ART 4100 History of Art** (3 q.h.)

Survey of history of Western art from prehistoric times to the end of the Roman Empire. Includes the study of major monuments, artists, and stylistic developments that evolved during the Prehistoric, Primitive, Egyptian, Mesopotamian, Aegean, Greek, and Roman periods. Slide lectures and discussions.

ART 4101 History of Art to the Sixteenth Century (3 q.h.)

Survey of history of Western art from the end of the Roman Empire to the late sixteenth century. Includes the study of major monuments, artists, and stylistic developments that evolved during the Early Christian, Byzantine, Early Medieval, Romanesque, Gothic, Early and High Renaissance, and late sixteenth-century Mannerist periods. Slide lectures and discussions.

ART 4102 History of Art to the Twentieth Century (3 q.h.)

Survey of history of Western art from the late sixteenth century to the twentieth century. Includes the study of major monuments, artists, and stylistic developments that evolved during the Baroque and Rococo periods, and in nineteenth- and twentieth-century Europe and America. Slide lectures and discussions.

ART 4105 Art through the Ages (3 q.h.)

Concentrated historical survey of Western art from prehistoric cave paintings to the twentieth century. Includes the study of major monuments, artists, and stylistic developments found in the Pre-Classical, Classical, Medieval, Renaissance, and Baroque periods, and in nineteenth- and twentieth-century Europe and America. Slide lectures and discussions.

ART 4106 Introduction to Art (3 q.h.)

Introduction to the language, techniques, aesthetics, and visual styles of painting, sculpture, graphic art, and architecture. Includes individual and comparative studies of major works of art in each field, discussion of terminology, and historical examination of the social, political, and cultural significance of each art form. Slide lectures and discussions.

ART 4108 History of Landscape Painting (3 q.h.)

A survey of landscape painting from its origins in cave painting (pre-history) to its contemporary forms, charting the major movements in Western art, as well as significant developments in Eastern art.

ART 4110 Modern Art (3 q.h.)

Examination of major movements and developments in painting, sculpture, and architecture from the late nineteenth century to the present. Emphasizes changing aesthetic views and the artistic, philosophical, historical, sociological, and political influences shaping those views and the modern movement as a whole. Slide lectures and discussion.

ART 4112 Visual Foundations (Studio)* (3 q.h.)

An introduction to the fundamental principles, nature, and meaning of visual organization, leading to an understanding of the concepts of two- and three-dimensional art. Topics include problems of space, balance, and formal inter-relationships as they occur in a variety of fine arts and design.

ART 4115 Graphic Design for Non-majors (Studio)* (3 q.h.)

An introduction to graphic design processes, principles, and concepts. Students have the opportunity to learn how to estimate jobs, design layouts, and prepare mechanicals and page layouts. Other topics include typography and type specification, copyfitting, design terminology, and an introduction to printing processes.

ART 4121 Principles of Drawing and Composition (Studio)* (3 q.h.)

Introduction to the fundamental principles of drawing and composition through formal graphic studies of line, shape, value, form, light, space, pattern, and texture. Stresses the use of pencil, charcoal, conte crayon, and other dry media. Slide lectures and critiques as needed. (Laboratory fee.)

ART 4122 Introduction to Figure Drawing (Studio)* (3 q.h.)

Introduction to drawing the human form. Includes basic studies in anatomy, proportion, negative/positive space, contour, gesture, mass, line, composition, and drawing technique. Slide lectures, critiques, and weekly sessions drawing from the model. (Laboratory fee.)

ART 4123 Drawing Workshop (Studio)* (3 q.h.)

Introduction to more advanced problems in the analysis of visual language and its creative organization. Emphasizes strengthening drawing techniques and developing a personal style.

ART 4125 Art Projects Workshop (Studio)* (3 q.h.)

This course is designed for students who have completed one or more basic courses in the visual arts. This workshop furthers the competency in the creation of two-dimensional visual art. The student's creative resources will be stressed as the source for traditional and non-traditional approaches to portrait, figure, and other subject matter. Investigations will center on drawing, painting, and printmaking as interactive means of art expression. Watercolor, oil, acrylics, pastels, and other media will be used as drawing and painting methods. Monotype printing will be examined as a printing method that evolves from painting and drawing.

ART 4126 Landscape Painting (Studio)* (3 q.h.)

An introduction to the art of landscape painting. This course will draw upon the traditions of landscape representation in the history of art, and the creative and expressive potential of each student. Sketching and painting outdoors are treated as an integral part of the course.

ART 4127 Basic Painting (Studio)* (3 q.h.)

Introduction to the fundamentals of painting. Includes formal studio assignments in the study of color, light, pictorial space systems, form, texture, and composition to establish a foundation for more individual, creative expression. Critiques and slide lectures as needed.

ART 4128 Intermediate Painting (Studio)* (3 q.h.)

Fundamental principles of painting, followed by more advanced studies in shape, scale, texture, brushstroke, and edge as well as color, light, form, and composition. Examines problems in a variety of stylistic approaches and techniques from the past and the present. Critiques and slide lectures as needed.

ART 4129 Painting Workshop (Studio)* (3 q.h.)

Individual development through a structured, project-oriented approach. Encourages recognition of the conceptual aspects of painting as well as the development of a personal painting style and unique visual imagery. Critiques and slide lectures as needed.

ART 4130 Printmaking: Relief (Studio)* (3 q.h.)

Fundamental course in the production of prints using the relief process. Includes woodcut, linoleum, block-cut, and other relief print techniques. Also explores paper stocks, inks, and carving and printing.

ART 4132 Printmaking: Intaglio (Studio)* (3 q.h.)

Fundamental course in the production of prints using the intaglio process. Includes etching, aquatint, dry point, engraving, sugar-lift, and other intaglio techniques. Focuses on drawing and design skills and on understanding the printmaking craft.

ART 4134 Color and Design Practice (Studio)* (3 q.h.)

Intermediate-level problems in the aesthetic organization of color and design elements. Includes expressive possibilities of color orchestration, color harmonies, light as color, and the spatial characteristics of color.

ART 4135 Design Foundations and Techniques (Studio)* (3 q.h.)

Introduction to the basic principles of two-dimensional design. Emphasis on tools and techniques used in the design field. Projects in two-dimensional visual perception and organization of forms in composition. Students develop their "design sense" while becoming proficient with fundamental board skills.

ART 4136 Basic Watercolor Painting (Studio)* (3 q.h.)

Practice and creative expression in the technical fundamentals of watercolor.

ART 4137 Watercolor Painting Practice (Studio)* (3 q.h.)

Creative expression in various watercolor techniques. *Prereq.* ART 4136 or instructor's permission.

ART 4138 Techniques of Watercolor Painting (Studio)* (3 q.h.)

Advanced expression in watercolor. *Prereq.* ART 4137 or instructor's permission.

ART 4139 Color Theory and Practice (3 q.h.)

Exploration of the objective nature and expressive possibilities of color. Through classwork and projects students examine the major theories and laws of color, its harmonies and special characteristics as well as color psychology, symbolism, and orchestration. Students discover their intuition for color and develop its application in art and design.

ART 4140 Graphic Communication and Production (3 q.h.)

Overview of the design and production processes of printed materials. Examines the designer's role in concept development and layout and introduces reprographics, typesetting, printing and color techniques, paper, and bindery methods. The scheduling and economic factors involved in bringing a piece to print are also addressed.

ART 4141 Graphic Design 1 (Studio)* (3 q.h.)

Introduction to professional problem solving in graphic design, including typographic and pictorial elements and their integration with verbal content to communicate ideas. Emphasis is on the fundamentals of visual thinking, concept development, and two-dimensional layout. Students gain experience with the design process from thumbnail sketches to the finished mechanical. *Prereq.* ART 4135 or instructor's permission.

ART 4142 Graphic Design 2 (Studio)* (3 q.h.)

Intermediate study and creative work in professional problem-solving in graphic design, with emphasis on creating overall design concepts. Students explore effective problem-solving techniques by taking a variety of projects from concept to finished presentation. *Prereq.* ART 4151.

ART 4143 Advertising Design (Studio)* (3 q.h.)

Introduction to advertising and to the language and design problems commonly met in the field. Study and creative work in advertising research analysis, layout, and preparation of client presentations. Marketing fundamentals are also addressed. *Prereq.* instructor's permission. *Prerequisite for Advertising Certificate students:* ART 4151.

ART 4151 Typography (3 q.h.)

The evolution of typography and its current applications. Emphasizes understanding basic typographic terms and techniques, acquiring composition skills such as copyfitting and type specification, understanding typography as symbol and as written record, exploring design concepts through typography, and learning the creative potential of new typesetting systems. Field trips to view state-of-the-art phototypesetting systems.

ART 4160 Basic Photography (Studio)* (3 q.h.)

Use of the camera, the negative, and the black-and-white print for the beginning student. Includes weekly shooting assignments, demonstrations, and hands-on darkroom experience. (Laboratory fee.)

ART 4162 Photography Workshop (Studio)* (3 q.h.)

Through close interaction with the instructor, students refine their technical skills and learn to make meaningful decisions about their relation to the world through the use of photography. Alternative processes such as infrared, toners, and large format are demonstrated and used. Contemporary trends in photography are illustrated through frequent slide presentations. (Laboratory fee.) *Prereq.* ART 4160 or equiv.

*Courses designated "(Studio)" meet for 3-3½ hours.

ART 4163 Introduction to Color Photography (Studio)* (3 q.h.)

Basic color theory and contemporary photographic processes and practices. Students work with color negative materials and print from color slides and negatives. Color printing facilities are provided. Lectures and critiques when appropriate. (Laboratory fee.) *Prereq.* ART 4160 or equiv.

ART 4171 The American Film: from Arcade to Dream Factory (3 q.h.)

Rise of the American film from the early days of kinetoscope peepshows and primitive arcade projections through the 1930s and 1940s and the golden age of Hollywood. Films representing major aesthetic, technical, or industry developments through 1946 are screened and discussed. Lectures, discussions, and assigned readings.

ART 4172 The American Film: Hollywood After Television (3 q.h.)

Development of the American film from the late 1940s to the present. Examines the threat of television, the breakdown of the studio system, the rise of the independents, and the lateral development of the major studios within entertainment conglomerates. Emphasizes recent activity in American films, including the work of Coppola, Lucas, Spielberg, Allen, Altman, and others. Key recent films are screened and discussed. Lectures, discussions, and assigned readings.

ART 4173 International Directions in Film (3 q.h.)

Comparative study of international film movements since 1950 and their influence on film as an art form. Emphasizes key recent films, major directors, and writers. Includes Italian Neo-Realism (1940s); Polish and Czech postwar films; the French New Wave; the personal cinema of Fellini, Bergman, and others; the American "whiz kids"; New German Cinema; and the Australian school. Lectures, discussions, and assigned readings.

ART 4175 History of Graphic Design (3 q.h.)

Graphic design from the mid-nineteenth century (the Industrial Revolution) to the present, with references to earlier influences. Focuses on the evolution of the graphic design field, its nature and function, major periods and trends, and the influence of technology and society. Slide lectures and discussion.

ART 4176 International Directions in Graphic Design (3 q.h.)

Contemporary theories and practices in international graphic design. Focuses on design activities in such major industrial nations as Germany, Italy, France, England, Canada, Japan, and the United States. Case studies reflecting graphic design solutions to a variety of visual communication problems are examined. Slide lectures and discussion.

ART 4181 Introduction to Computer-Aided Graphic Design (Studio)* (3 q.h.)

Introduction to the terminology, concepts, and applications of computer-aided graphic design. Through lectures, demonstrations, and labs, students explore the range of computer graphics technology from personal computers to large-scale, dedicated, turn key systems; input and output devices and their applications; the advantages and limitations of computers as design tools; and the future impact of computer graphics on graphic design and communication. Lectures are complemented by hands-on computer sessions. Guest lecturers and field trips. Limited enrollment. (Laboratory fee.) *Prereq.* ART 4140.

ART 4182 Computer-Aided Graphic Design Workshop (Studio)* (3 q.h.)

An interdisciplinary course further exploring the creative potential of computer graphics applications. Students work with various forms of input and output devices to become acquainted with the artistic potential of each interface. Limited enrollment. (Laboratory fee.) *Prereq.* ART 4181 or equiv.

ART 4183 Electronic Publishing Design (Studio)* (3 q.h.)

Designed to teach the computer novice how to apply the basics of electronic publishing software for business and corporate publications. Students will use a variety of PC application programs including Ventura, PageMaker, and popular paint and draw programs. Design, page-layout, typography, hardware, and management issues will be applied to real life publications and business documents. (Laboratory fee.) *Prereq.* ART 4140.

ART 4184 Business Presentation Graphics (3 q.h.)

Students will create and produce computerized slide presentations for specific corporate problems. Emphasis is placed on the selection and layout sequencing of type, visuals and peripheral elements for word slides, graphs, charts, and support data relevant to business sales and agenda presentations.

ART 4185 Creative Imaging: Custom Computer Design (3 q.h.)

Vector drawing programs, raster-based paint programs, scanning, and image enhancement techniques are utilized to create original visuals appropriate for advertising, publishing, and television graphics. Students will create logo designs, new graphics, book and magazine cover designs, and editorial illustrations.

ART 4186 Computer Graphic Design Portfolio (3 q.h.)

Students may choose to either edit and refine a series of their best computer graphic designs or to work on a specific portfolio design project. All students will design a self-promotion piece using the layout application of their choice.

ART 4187 Graphic Software Studies 1 (3 q.h.)

Identification and application of popular vector-based drawing programs including: MacDraw, Adobe Illustrator, Free Lance, Free Hand, and AGX Custom.

ART 4188 Graphic Software Studies 2 (3 q.h.)

Identification and application of pixel/raster-based paint programs including: MacPaint, Targa Tips, Pixel Paint, and Lumena.

ART 4189 Graphic Software Studies 3 (3 q.h.)

Identification and application of pagination, layout, and design programs including: PageMaker, Ventura, ReadySetGo, Interleaf, and Quark Express.

ART 4204 Italian Renaissance Art (3 q.h.)

Survey of Italian painting, sculpture, and architecture of the fifteenth and sixteenth centuries, with special attention to their historical, cultural, and social contexts. Considers how Renaissance ideals were reflected in the renewed interest in classical harmony and order, and in the growing self-awareness, individualism, and naturalism of the time. Covers such artists as Giotto, Donatello, Botticelli, Michelangelo, da Vinci, Raphael, and Titian.

ART 4210 French Painting (3 q.h.)

Development of French painting from the French Revolution through the nineteenth century. Examines Neoclassicism, Romanticism, Realism, Impressionism, and Post-Impressionism, focusing on such figures as David, Delacroix, Courbet, Manet, Degas, Monet, Renoir, Cezanne, and Van Gogh. Also examines the French interest in the formal problems of painting and the painting process as distinct from its narrative content.

ART 4213 Modern Painting (3 q.h.)

Developments in painting from the late nineteenth century through the early 1930s, examining major schools, movements, and artists from Post-Impressionism through Surrealism. Focuses on important shifts in painting concepts and the rise of innovative modes of expression instrumental in establishing the foundation of Modernism.

ART 4214 Contemporary Painting (3 q.h.)

Developments in painting from the early 1940s to the present, including major schools, movements, and artists. Focuses on the cultural impact of the exodus of artists from Europe to the United States prior to World War II, the meteoric rise of Abstract Expressionism, and the diversity of movements since World War II, such as Pop Art, Minimalism, Conceptual Art, and New Realism.

ART 4220 American Painting and Sculpture (3 q.h.)

American painting and sculpture from colonial times through the early 1930s. Includes the study of painting from itinerant colonial "limners" through Copley, Benjamin West, and the English tradition; the Hudson River School; Eakins, Hopper, Marin, Stella, and O'Keeffe; and the founding of American Modernist painting. Also examines sculpture from colonial gravestone reliefs through Rush, Augur, and the public monuments of French, Saint-Gaudens, and Calder.

ART 4221 Women in Art and Women Artists (3 q.h.)

Women in the arts from prehistoric times to the present. Focuses on women as symbols, religious figures, and erotic objects, and on idealized images of femininity. Examples include fertility images, Venus images, Madonnas, portraits, and genre works. Also examines the historical role of women as artists.

ART 4223 American Architecture (3 q.h.)

American architecture from the Colonial period through the early 1930s. Includes the seventeenth-century Early American style, the eighteenth-century Georgian style, the Republican style, mid-nineteenth-century Revival styles, the Stick-and-Shingle styles, Richardsonianism, Sullivan and the rise of the skyscraper, and Frank Lloyd Wright.

ART 4228 Twentieth-Century Architecture (3 q.h.)

Introduction to European and American architecture of the twentieth century. Examines Gropius's Bauhaus tenets concerning housing, urban planning, and utilitarian mass production; Mies van der Rohe, Le Corbusier, and

the International style; Frank Lloyd Wright; and the foundation of American architectural Modernism as exemplified by Neutra, Johnson, Saarinen, and Buckminster Fuller.

ART 4230 History of Photography (3 q.h.)

Developments in photography from the early daguerreotypes to the present. Includes major movements, styles, artists, and significant technological developments. Slide lectures and assigned readings.

ART 4231 Contemporary Photography (3 q.h.)

Evolution of styles and techniques in contemporary photography since World War II. Emphasis is on the variety of image-making techniques and photographic styles and concepts of the last twenty years. Slide lectures and assigned readings.

ART 4251 Advanced Graphic Design (Studio)* (3 q.h.)

Portfolio-development course for students who have successfully completed all other Graphic Design and Visual Communication certificate program requirements. Emphasis is on professional design skills and personal style. *Prereq.* 27 q.h. of graphic certificate courses. *Prereq.* ART 4151.

ART 4366 Promotional and Technical Publications: Design and Production (3 q.h.)

Design, production, and economics of promotional and technical publications. Using a case-study approach with a micro-based computer system, students explore design and production of marketing, advertising, and sales-support publications as well as technical service manuals, operating guides, and other documentation. *Prereq.* ART 4151. *Not open to students who have taken ART 4364 or ART 4365.*

ART 4367 Illustration (3 q.h.)

Introduction to promotional and editorial illustration, including applications in advertising and publishing. Covers the objectives, tools, and techniques unique to illustration. Lectures, demonstrations, and hands-on studio projects. *Prereq.* ART 4151. Biomedical Illustration certificate students see BIO 4420.

ART 4368 Graphic Design for Media (3 q.h.)

Surveys the expanding use of slide-tape, multi-image, and multi-media video and film in areas ranging from public relations and sales to documentary and entertainment presentations. The collaborative role of writers, producers, and art directors in the design and production of media projects, particularly audio-visual projects is explored. *Prereq.* ART 4151.

ART 4402 Marketing Strategies for Printing and Publishing (3 q.h.)

Topics include the integrated nature of marketing; the relationship of marketing to product development; advertising, promotion, and sales; the creation of marketing support materials; and the development of an overall marketing plan and timeline.

ART 4410 Electronic Imaging Systems (3 q.h.)

An introduction to current black-and-white and color image scanning, processing and separation technology for page and film assembly. Concepts, terminology, and techniques of manipulating, merging, and creating graphics electronically.

ART 4415 Electronic Document Production (3 q.h.)

Current principles and methods of electronic publishing and electronic document production. Instruction on text inputting, text markup, and editing during the review cycle, selection of style prior to input/composition, tagging, development of page layouts, graphics development, integration, and manipulation.

ART 4416 Style Set-Up for Electronic Document Production (Studio)* (3 q.h.)

Style specifications for electronic document production. Instruction on format definitions; pagination, hyphenation, and justification specification; page layout definition; and interactive layout tool usage. *Prereq.* ART 4415.

ART 4421 Methods of Book Design (Studio)* (3 q.h.)

The basic terminology, tools, and skills of book design. Students practice drawing layouts, casting off manuscript, specifying type, and dummyping pages. *Prereq.* ART 4141.

ART 4431 Graphic Composition Systems 1 (Studio)* (3 q.h.)

Current principles and methods of photocomposition as compared to desktop publishing systems. Covers all aspects of the composition process, including markup, copyfitting, parameter set-up, input, correcting, and output. A variety of popular software including Pagemaker, Ready-Set-Go, Ventura Publisher, and Deskset Design Edition II is translated and output on laser and photocomposition systems.

*Courses designated "(Studio)" meet for 3-3½ hours.

ART 4432 Graphic Composition Systems 2 (Studio)* (3 q.h.)

Emphasis is on computer mainframe interfacing, ACI operation and telecommunications, networking, developing translation tables, word processing/data conversion, automatic tabulation, and pagination. *Prereq.* ART 4431.

ART 4443 Imaging Procedures and Systems 1 (Studio)* (3 q.h.)

Methods and operations involved in producing film negatives and assembled flats. Students have the opportunity to create line and halftone negatives. Also covered are contacting, darkroom, and film assembly procedures; signature imposition, halftone, and combination flat techniques; and reflection transmission densitometry.

ART 4444 Imaging Procedures and Systems 2 (Studio)* (3 q.h.)

Creating black and white color mechanical separation masks by conventional contacting methods. Includes planning and preparing separation masks for "fake" color, selecting screen tint values, making and correcting color proofs; creating special effects with posterization, making duotones, and process color-film assembly. *Prereq.* ART 4443.

ART 4461 Applications of Electronic Publishing (3 q.h.)

Examination of how electronic and desktop publishing system technology applies to publishing, typesetting, and printing. Topics include a review of electronic publishing fundamentals, state-of-the-art systems, and trends in graphic arts technology, with sessions devoted to book publishing; magazine publishing; pre-press and type house applications; commercial, corporate, or in-plant publishing; newspaper publishing; and government and small business applications. Also covers organization structure, business issues, product, and in-depth analysis of production/workflow procedures and cost justification criteria.

ART 4465 Business Operations for the Graphic Arts (3 q.h.)

Introduction to operations management specifically designed for the graphics industry. Basic business concerns of accounting, finance, budgeting, marketing, planning, communications, personnel, motivation, and leadership.

ART 4466 Establishing and Operating a Small Graphics Business (3 q.h.)

The positioning process used to determine the proper market for the service or product. Students explore how positioning and market research affect image, public relations materials, advertising, pricing, and actual production methods for a given graphics business. Establishing hourly rates, record keeping, job quoting, billing procedures, sales techniques, and state and federal tax requirements for small businesses.

ART 4468 Safety and Health Issues for the Graphic Arts (3 q.h.)

A thorough examination of potential hazards including fire, electrical, sound, chemicals, and toxic fumes. Study of the rules and regulations of OSHA, the role of safety committees in complying with OSHA requirements, and the effect these requirements have on various business operations within the company. Additional information is provided on ergonomics, job stress, and employer-employee rights and responsibilities.

ART 4469 Operations Analysis for the Graphic Arts Industry (3 q.h.)

The principles and practices of work simplification as they apply to the graphic arts industry. Topics include process analysis, operations analysis, motion and micromotion study, plant and workplace layout, equipment design and selection, labor cost reduction, operator training, human relations problems, time study and time standards, and techniques for improving productivity.

ART 4471 Quality Control in the Graphic Arts Industry (3 q.h.)

Basic concepts and costs of quality, organization for quality, programs for improving quality and reducing waste and spoilage, materials processes, and product quality-control procedures as they relate to printing and publishing. Basic statistical quality-control concepts such as process capability and analysis, control charts, and sampling.

ART 4474 Research and Technology Evaluation for Electronic Publishing and Printing (3 q.h.)

Developing and conducting needs assessment tools for the identification of appropriate electronic publishing technology. Topics include a description of various electronic publishing businesses; current and future staffing and training needs; current and future control forms; current design standards; determining productivity levels; and matching vendor functions and features to the needs of the organization.

ART 4475 Graphic Arts Production Control (3 q.h.)

The techniques of managing production in commercial printing and publishing plants. Specialization vs. standardization, production forecasting and control; routing and planning; records of production; quality control; and effective use of personnel. Various production management controls of web- and sheet-fed, commercial, and publication printing are presented, analyzed, and discussed.

ART 4479 Estimating Procedures for the Graphic Arts (3 q.h.)

Basic estimation procedures and principles for single- and multi-color printing. All facets of planning the job for estimating: design and layout, typography, paper, prep and plates, presswork, binding, and finishing. Emphasis throughout is on active student participation in solving practical estimation problems.

ART 4500 Senior Project (3 q.h.)

Seniors choose a final major project to demonstrate professional proficiency and originality in a specific area of design. Finished projects are reviewed by a board of design faculty with the student present to discuss and defend the effectiveness and merit of the project.

ART 4501 Portfolio Development (3 q.h.)

Opportunity for students to select and polish their best design pieces and create a unified, professional portfolio. Concentration is on materials and options available for showing two- and three-dimensional works in one-to-one and group situations. Attention is also given to the design resume and to interview and presentation skills.

ART 4810 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 q.p.a.

ART 4811 Honors Program 2 (4 q.h.)

See ART 4810.

ART 4812 Honors Program 3 (4 q.h.)

See ART 4810.

ART 4815 Advanced Tutorial 1 (3 q.h.)

Opportunity to take upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.

ART 4816 Advanced Tutorial 2 (3 q.h.)

See ART 4815.

ART 4820 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

ART 4821 Independent Study 2 (3 q.h.)

See ART 4820.

ART 4822 Independent Study 3 (3 q.h.)

See ART 4821.

AMERICAN SIGN LANGUAGE**ASL 4101 American Sign Language 1** (4 q.h.)

Introduction to American Sign Language, the language used by members of the deaf community in the United States and parts of Canada. Focuses on conversation in signs, basic rules of grammar, and cultural aspects of the deaf community.

ASL 4102 American Sign Language 2 (4 q.h.)

Continuation of basic American Sign Language and culture study, with emphasis on building receptive and expressive sign vocabulary; use of signing space; use of non-manual components, including facial expressions and body postures; and an introduction to finger spelling. *Prereq.* ASL 4101 or by examination.

ASL 4201 Intermediate American Sign Language 1 (4 q.h.)

Further development of receptive and expressive skills, finger spelling, vocabulary building, and grammatical structures. Encourages more creative use of expression, classifiers, body postures, and the signing space. Introduces sign variations (regional and ethnic), and political and educational institutions of the deaf community. *Prereq.* ASL 4102 or by examination.

ASL 4202 Intermediate American Sign Language 2 (4 q.h.)

Intensive practice involving expressive and receptive skills in storytelling and dialogue. Introduces language forms found in ASL poetry and cultural features as they are displayed in art and theatre. *Prereq.* ASL 4201.

ASL 4301 Advanced American Sign Language Proficiency 1 (4 q.h.)

Vocabulary building and mastery of grammar through rigorous receptive and expressive language activities. Includes student-led discussions, debates, and prepared reports on topics in deaf culture, society, and current affairs. *Prereq.* ASL 4202.

ASL 4302 Advanced American Sign Language Proficiency 2 (4 q.h.)

Continuation of ASL 4301. *Prereq.* ASL 4301.

ASL 4410 Linguistics of American Sign Language (3 q.h.)

For skilled ASL signers with no previous training in linguistics. Conducted in ASL, the course is descriptive and data-oriented rather than theoretical. Includes the parts of a sign; building words in ASL; sentence structure (questions, statements, relative clauses, etc.); the meaning and issue of iconicity; organization of sentences according to old and new information; and the structure of stories. Also, grammatical features of ASL, such as classifiers, specifiers, verb modulations and aspects, and the role of facial expression. *Not open to students who have taken ASL 4404. Prereq.* ASL 4102.

ASL 4411 Deaf History (3 q.h.)

The history of deaf people in the Western world, with emphasis on the American deaf community, its language, education, and relation to hearing society. *Not open to students who have taken ASL 4403. Prereq.* ASL 4101 or instructor's permission.

ASL 4412 American Deaf Culture (3 q.h.)

The status of deaf people as both a linguistic and cultural minority group. Designed for individuals who may or may not have had prior experience with deaf people, the course raises questions concerning the nature of sign language and its varieties, the education of deaf people, the historical treatment of deafness, the sociological and cultural makeup of deaf individuals, and the nature of ASL literature and poetry. *Not open to students who have taken ASL 4402.*

ASL 4413 American Sign Language Literature (3 q.h.)

Students read and discuss in ASL various genres of American Sign Language literature. Concentration is on the work of current recognized narrators in both literary and face-to-face storytelling traditions. Includes selected autobiographical sketches, lectures, stories, and letters from the early 1900s by such figures as Clerc, Veditz, Hotchkiss, Gallaudet, and others. A videotaped research essay is required at the end of the course. *Not*

open to students who have taken ASL 4401. Prereq. ASL 4202 or by examination.

ASL 4600 Introduction to Interpreting (formerly ASL 4501 Sign Language Interpreting 1) (3 q.h.)

An overview of the interpreting profession, including the responsibilities, ethics, and aptitudes of interpreters; professional associations; the law and business of interpreting; the bicultural, bilingual context in which interpreting takes place; basic translation and interpretation; environment and audience; special populations; free-lance versus in-house positions; and evaluation and certification. *Prereq.* ASL 4302 or instructor's permission.

ASL 4601 American Sign Language Interpreting 1 (4 q.h.)

Translations dealing with a variety of styles and registers, study of the interpreting process, discourse analysis, and consecutive interpreting. *Prereq.* ASL 4410; ASL 4302 and ASL 4600 may be taken concurrently.

ASL 4602 American Sign Language Interpreting 2 (4 q.h.)

Breakdown of the simultaneous interpretation task into several phases. Emphasizes divided attention, paraphrasing, cloze skills, and flexibility in English and ASL. *Prereq.* ASL 4601.

ASL 4603 American Sign Language Interpreting 3 (4 q.h.)

Refinement of skills learned in ASL 4601 and ASL 4602. *Prereq.* ASL 4602.

ASL 4604 Special Topics in Interpreting 1 (3 q.h.)

Topics concerning interpretation for special deaf populations, including the oral, deaf-blind, emotionally, and multiply handicapped. Covers theory and practice. *Prereq.* ASL 4601.

ASL 4605 Special Topics in Interpreting 2 (3 q.h.)

Deals with interpretation in specific situations, including educational, legal, psychiatric, and medical. Emphasizes work with the intermediary interpreter. *Prereq.* ASL 4601.

ASL 4606 Interpreter Roles and Ethics (3 q.h.)

Discussions, hypothetical situations, and role playing that explore ethical standards and dilemmas in sign language interpreting and in other professions. Also, culturally objective standards, ethics, and professional principles; power versus responsibility; and the RID Code of Ethics. *Prereq.* ASL 4601 and ASL 4412, which may be taken concurrently.

ASL 4607 Interpreting Lab (4 q.h.)

Practice in simultaneous interpreting skills, with constructive feedback. *Prereq.* ASL 4603.

ASL 4608 Practicum (4 q.h.)

Practical interpreting experience in agencies serving deaf people. Biweekly seminar focuses on linguistic and ethical questions and dilemmas. Requires six hours per week in an agen-

cy. *Prereq.* ASL 4603, ASL 4604, ASL 4605, ASL 4606, and ASL 4607.

ASL 4800 American Sign Language Interpreting Seminar (formerly ASL 4507-ASL 4510 American Sign Language Interpreting Seminars) (1 q.h.)

Short-term training opportunities for currently practicing sign language interpreters, scheduled for two Saturdays each fall, winter, and spring quarter. Because the topics or skill areas addressed change from quarter to quarter, students may take this course repeatedly for credit. Limited enrollment. For topic information, call American Sign Language Programs, 617-437-3064 (voice) or 617-437-3067 (TTY).

ASL 4801 Advanced Tutorial in ASL 1 (4 q.h.)

Opportunity for qualified students to take an upper-level, required course as a tutorial when it is not available in the usual format. The tutorial format, which involves a combination of meetings with the tutorial adviser, phone conferences, and outside course preparation, will conform with University standards of 12 hours of academic work per week.

ASL 4802 Advanced Tutorial in ASL 2 (4 q.h.)

Opportunity for qualified students to take an upper-level, required course as a tutorial when it is not available in the usual format. The tutorial, which involves a combination of meetings with the tutorial adviser, phone conferences, and outside course preparation, will conform with University standards of 12 hours of academic work per week.

BIOLOGY

BIO 4103 Biology 1 (General) (3 cl., 3 lab., 4 q.h.)

Biology of the cell, including its ultrastructure, function, diversity, genetics, and reproduction. Also examines the molecular composition of cells, including enzymes, chemistry, bioenergetics, respiration, and photosynthesis. (Laboratory fee.) *To receive credit for this course, you must also register for BIO 4153, Lab for BIO 4103.*

BIO 4104 Biology 2 (Animal) (3 cl., 3 lab., 4 q.h.)

Systematic comparative study of the diversity of animal life forms, including structure, function, environment, and evolution. (Laboratory fee.) *To receive credit for this course, you must also register for BIO 4154, Lab for BIO 4104. Prereq.* BIO 4103 or equiv.

BIO 4105 Biology 3 (Animal) (3 cl., 3 lab., 4 q.h.)

Functional anatomy of animal organ systems, including locomotion, nutrition, internal transport, gas exchange, molecular regula-

tion, defense systems, nervous and hormonal control, and sensory reception. Also covers ecology, population dynamics, and the origin of life. (Laboratory fee.) *To receive credit for this course, you must also register for BIO 4155, Lab for BIO 4105. Prereq.* BIO 4104 or equiv.

BIO 4133 Special Topics in Botany (3 q.h.)

Topics covered: How botany impacts human life and society; current genetic manipulation of agricultural plants; historical role of plants in pharmacology; the role of plants and agriculture in the cultural evolution of man (nomad to farmer); botany in literature and poetry.

BIO 4175 Human Anatomy and Physiology 1

(2 cl., 2 lab., 3 q.h.)

Introduction to human gross anatomy, including osteology, myology, and angiology of the thorax, abdomen, pelvis, head, and neck. The laboratory generally includes a study of human bones and cat dissection. (Laboratory fee.) *The required laboratory is BIO 4195, Lab for BIO 4175.*

BIO 4176 Human Anatomy and Physiology 2

(2 cl., 2 lab., 3 q.h.)

Anatomy and physiology of the nervous system, endocrine glands, senses, respiratory system, and membranes. The laboratory generally includes gross and microscopic anatomy of the nervous and endocrine systems, and physiology of the nerves, muscles, vision, hearing, and respiratory system. (Laboratory fee.) *The required laboratory is BIO 4196, Lab for BIO 4176.*

BIO 4177 Human Anatomy and Physiology 3

(2 cl., 2 lab., 3 q.h.)

Anatomy and physiology of the cardiovascular, digestive, urinary, and reproductive systems; fetal development. The laboratory generally deals with the microscopic anatomy of these systems and the physiology of the blood, heart, and urinary tract. (Laboratory fee.) *The required laboratory is BIO 4197, Lab for BIO 4177. Prereq.* BIO 4176 or equiv.

BIO 4178 Anatomy and Physiology A (4 q.h.)

Human anatomy and physiology. Describes the cell and its physiology, the structure of tissues, and the anatomy and physiology of the cardiovascular system and blood, the respiratory system, and the urinary system. (Laboratory fee.) *Prereq.* BIO 4198. *BIO 4178 and BIO 4179 may not be substituted for BIO 4175, 4176, 4177.*

BIO 4179 Anatomy and Physiology B (4 q.h.)

Continuation of BIO 4178. Describes the anatomy and physiology of the nervous system, skeletomuscular system, digestive system, endocrine and reproductive systems. (Laboratory fee.) *Prereq.* BIO 4199. *BIO 4178 and BIO 4179 may not be substituted for BIO 4175, 4176 and 4177.*

BIO 4185 The Natural World of Massachusetts 1* (3 cl., 3 q.h.)

Ecological analysis of the human situation and human interaction with other organisms; the necessary foundation of biological principles.

BIO 4186 The Natural World of Massachusetts 2* (3 cl., 3 q.h.)

Continuation of BIO 4185. *Prereq.* BIO 4185 or *equiv.*

BIO 4190 Microbiology 1 (2 cl., 3 lab., 3 q.h.)

Morphology and biochemistry of bacteria. (Laboratory fee.) *The required laboratory is BIO 4200, Lab for BIO 4190. Prereq.* BIO 4105 or *equiv.*

BIO 4191 Microbiology 2 (2 cl., 3 lab., 3 q.h.)

Survey of pathogenic microorganisms. (Laboratory fee.) *The required laboratory is BIO 4201, Lab for BIO 4191. Prereq.* BIO 4190 or *equiv.*

BIO 4192 Microbiology 3 (2 cl., 3 lab., 3 q.h.)

Examination of the characteristics and role of microorganisms in the environment. (Laboratory fee.) *The required laboratory is BIO 4202, Lab for BIO 4192. Prereq.* BIO 4191 or *equiv.*

BIO 4198 Laboratory for Anatomy and Physiology A

Laboratory for Anatomy and Physiology A BIO 4178. (Laboratory fee.)

BIO 4199 Laboratory for Anatomy and Physiology B

Laboratory for Anatomy and Physiology B BIO 4179. (Laboratory fee.)

BIO 4224 Ecology 1 (3 cl., 3 q.h.)

Environmental factors, such as the soil system, water, the atmosphere, temperature, light, wind, and pressure; physio-chemical factors such as carbon dioxide, nitrogen, and mineral nutrients; the habitat; and the distribution of plants and animals in the world according to temperature and precipitation. *Prereq.* BIO 4104 or *equiv.*

BIO 4225 Ecology 2 (3 cl., 3 q.h.)

Study of the ecosystem; ecological niches; producers, consumers, and decomposers; the pond, desert, forest, and seashore ecosystems; energy cycle and efficiency of energy utiliza-

tion; mass, weight, and energy pyramids.

Prereq. BIO 4224 or *equiv.*

BIO 4226 Ecology 3 (3 cl., 3 q.h.)

Study of population ecology, biotic communities and population growth, relations between the species, symbiosis, competition, predation, and succession. *Prereq.* BIO 4225 or *equiv.*

BIO 4235 Genetics 1 (3 cl., 3 q.h.)

Topics include nucleic acid structure, replication of genetic materials, mitosis, meiosis, and Mendelian inheritance. *Prereq.* BIO 4103.

BIO 4236 Genetics 2 (3 cl., 3 q.h.)

Examination of mutation, regulation of gene expression, population genetics, engineering, and genetics of bacteria and viruses. *Prereq.* BIO 4235.

BIO 4237 Genetics Laboratory (4 lab., 2 q.h.)

Laboratory exercises involving principles of Mendelian inheritance, linkage, and crossing-over. Classical genetics utilizing *Drosophila*; biochemical studies utilizing *Neurospora* and *E. coli*. (Laboratory fee.) *Prereq.* BIO 4236 or *equiv.*

BIO 4246 Cell Biology 1 (3 cl., 3 q.h.)

Chemical composition, structure of cells and organelles, transport processes, cell motion and excitability, and growth. *Prereq.* BIO 4103, BIO 4236, and CHM 4263 or *equiv.*

BIO 4247 Cell Biology 2 (3 cl., 3 q.h.)

Cellular energy supply, enzyme function, respiration and metabolism, photosynthesis and other synthetic pathways, and control of cellular processes. *Prereq.* BIO 4246 or *equiv.*

BIO 4248 Cell Biology Laboratory (4 lab., 2 q.h.)

Laboratory techniques in cell biology, microscopy, structure and chemical composition of cells, enzyme measurements, photosynthesis, respiration, active transport, and growth. (Laboratory fee.) *Prereq.* BIO 4247 or *equiv.*

BIO 4258 Advanced Human Physiology 1 (3 cl., 3 q.h.)

Study of human physiology emphasizing cellular processes and underlying organ functions and the interactions and control of organ systems. Selected physiological topics are considered as time allows. *Prereq.* BIO 4177 and CHM 4113 or *equiv.*

BIO 4259 Advanced Human Physiology 2 (3 cl., 3 q.h.)

Cardiovascular considerations; the immune system; the AIDS problem. Biological control mechanisms; selected endocrine topics. *Prereq.* BIO 4258.

*Taught odd-numbered academic years.

BIO 4260 Cell, Tissue and Organ Culture (3 q.h.)

General principles and technique of tissue culture. The behavior of cells in culture, cell lines and relevant media are discussed. Methodology of animal and plant culture and its use in virology, cancer research and radiobiology.

BIO 4320 Medical Microbiology (2 cl., 4 lab., 4 q.h.)

Major characteristics of disease-producing organisms. (Laboratory fee.) *The required laboratory is BIO 4330, Lab for BIO 4320, which generally meets on a different night. Prereq. BIO 4192 or professional laboratory experience in bacteriology.*

BIO 4374 Histology 1 (2 cl., 2 lab, 3 q.h.)

Examination of cell structure and tissue organization, including epithelium, muscle, and connective tissue. Also covers cartilage, bone, and nervous system. (Laboratory fee.) *The required laboratory is BIO 4384, Lab for BIO 4374. Prereq. BIO 4175.*

BIO 4375 Histology 2 (2 cl., 2 lab, 3 q.h.)

Examination of the blood, skin, cardiovascular and lymphatic systems, as well as the gastrointestinal system, including the oral cavity, GI tract, liver, and gall bladder. (Laboratory fee.) *The required laboratory is BIO 4385, Lab for BIO 4375.*

BIO 4376 Histology 3 (2 cl., 2 lab, 3 q.h.)

Examination of the respiratory, urinary, and male and female reproductive systems, as well as the endocrine glands and the eyes and ears. (Laboratory fee.) *The required laboratory is BIO 4386, Lab for BIO 4376.*

BIO 4411 Embryology and Development 1 (3 q.h.)

Topics include gametogenesis, reproductive physiology, fertilization, blastulation, gastrulation, and early embryogenesis. Required laboratory BIO 4421, emphasizes invertebrate and amphibian embryology. *Prereq. BIO 4374 or equiv.*

BIO 4412 Embryology and Development 2 (3 q.h.)

Topics include morphogenesis and pattern formation, placentation, and organogenesis. Required laboratory BIO 4422, emphasizes chick and pig embryology. *Prereq. BIO 4411 or equiv.*

BIO 4420 Biomedical Illustration (4 q.h.)

Examines the uses of biomedical illustration in the preparation of visual materials including teaching visuals, illustrations for publications, models and graphics for films and television. Anatomy and skeletal characteristics will be surveyed including

specific skills and techniques necessary to draw three-dimensional subjects from direct observation, interpreting them in two-dimensional media. In addition to discussions and demonstrations, students will undertake individual projects in preparing materials for publications, scientific illustration and preparation of educational materials.

BIO 4441 Parasitology (2.5 cl., 3.25 lab, 4 q.h.)

Parasitic organisms, particularly those affecting humans and domestic animals, and their life cycles, modes of transmission, and diagnosis and treatment. Includes microscopic examination of prepared and live material. (Laboratory fee.) *The required laboratory is BIO 4451, Lab for BIO 4441. Prereq. BIO 4103 or instructor's permission.*

BIO 4455 Introduction to Biotechnology (3 q.h.)

Examines the historical development, basic technologies, and commercial potential of biotechnology. Basic biological concepts are first reviewed including the steps leading to the 20th century revolution in molecular and cell biology. The technologist of recombinant DNA, monoclonal antibody production, and nucleic acid probe development are outlined along with their therapeutic, diagnostic, and experimental uses. Newer, emerging technologies and applications are discussed where appropriate. The commercial state of the art and its developmental marketing problems are included. *Prereq. Knowledge of chemistry and biology.*

BIO 4461 Immunology (2 cl., 4 lab., 4 q.h.)

Biological, chemical, and physical attributes of antigens and antibodies, together with their serological interactions. (Laboratory fee.) *The required laboratory is BIO 4462, Lab for BIO 4461, which generally meets on a different night. Prereq. BIO 4191, CHM 4263, or equiv.*

BIO 4700 Advanced Tutorial 1 (4 q.h.)

Opportunity to take upper-level course independently. See page 16 for details. *Prereq. 87 q.h.*

BIO 4701 Advanced Tutorial 2 (4 q.h.)

See Bio 4700.

BIO 4801 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq. 96 q.h. and 3.0 q.p.a.*

BIO 4802 Independent Study 2 (3 q.h.)

See BIO 4801.

BUSINESS LAW

BL 4101 Law 1 (3 q.h.)

Introduction to the legal system. Study of the nature, formation, and essential elements of contracts, including performance and remedies for breach. Also covers agency law, including the rights and duties of principal and agent, the scope of authority, and relationships to third persons.

BL 4102 Law 2 (3 q.h.)

Sales as governed by the Uniform Commercial Code, including the law of warranty, business organizations, partnerships, corporations, and other important business forms.

Prereq. BL 4101.

BL 4103 Law 3 (3 q.h.)

Commercial paper, the function of negotiability, bank checks and promissory notes, real property, personal property, bailments, bankruptcy, and secured transactions.

Prereq. BL 4102.

BL 4105 Law (Intensive) (6 q.h.)

Same as BL 4101 and BL 4102.

BL 4110 Law for Managers (3 q.h.)

Study of legal problems for managers including rights and duties in the employment relationship, acquisition of computer software and hardware, effective use of legal counsel, personal liability issues for managers, credit and collection law, and other selected topics of interest.

BL 4115 Law and Social Issues (3 q.h.)

Structure and dynamics of the American legal system through analysis of selected cases dealing with social issues.

BL 4120 Law for Personal Planning (3 q.h.)

Legal aspects of personal and family planning, including consumer rights, wills and estate planning, marital law, real estate purchase, tenants' rights, and other selected topics of interest.

BL 4316 International Business Law (3 q.h.)

Surveys the leading principles in international business law as applied in decisions of domestic and international courts; the sources, development and authority of international business law, such as the laws of the European Common Market; and the making, interpretation and enforcement of treaties, and the organization and jurisdiction of international tribunals.

CHEMISTRY

CHM 4105 Chemistry and the Environment (3 cl., 3 q.h.)

Fundamental chemical principles, using examples from the geochemical and the internal environments of human beings as well as the home, the farm, and the workplace.

CHM 4111 General Chemistry 1 (2 cl., 2.4 lab., 3 q.h.)

Fundamental chemistry concepts, such as symbols, formulas, equations, atomic weights, and calculations based on equations. Also covers gases, liquids, solutions, and ionization. (Laboratory fee.) *The required laboratory is CHM 4117, Lab for CHM 4111. Prereq. MTH 4112 or equiv. (can be taken concurrently).*

CHM 4112 General Chemistry 2 (2 cl., 2.4 lab., 3 q.h.)

Atomic structure, bonding, molecular structure, oxidation and reduction reactions, and equilibrium and kinetics. (Laboratory fee.) *The required laboratory is CHM 4118, Lab for CHM 4112. Prereq. CHM 4111 or equiv.*

CHM 4113 General Chemistry 3 (2 cl., 2.4 lab., 3 q.h.)

Thermochemistry and electrochemistry, acids, bases, and solubility products, nuclear chemistry, introductory organic chemistry, and biochemistry. (Laboratory fee.) *The required laboratory is CHM 4119, Lab for CHM 4113. Prereq. CHM 4112 or equiv.*

CHM 4221 Analytical Chemistry 1 (2 cl., 2.4 lab., 3 q.h.)

Principles of gravimetric and titrimetric analysis (wet chemistry). Introduces statistics as applied to analytical chemistry and examines such topics as chemical equilibrium and acid-base equilibria in simple and complex systems. Gravimetric and titrimetric experiments are performed. (Laboratory fee.) *The required laboratory is CHM 4227, Lab for CHM 4221. Prereq. CHM 4113 or equiv.*

CHM 4222 Analytical Chemistry 2 (2 cl., 2.4 lab., 3 q.h.)

Continuation of CHM 4221. Covers complex formation titration, precipitation titrations, and oxidation-reduction titrations. Electrical methods of analysis, such as potentiometry, electrolysis, coulometry, and polarography, are discussed and titrimetric analyses and experiments involving electricity are performed. (Laboratory fee.) *The required laboratory is CHM 4228, Lab for CHM 4222. Prereq. CHM 4221 or equiv.*

CHM 4223 Analytical Chemistry 3 (2 cl., 2.4 lab., 3 q.h.)

Spectrophotometry as a method of analysis, including ultraviolet, visible, infrared, and

fluorescence methods; flame emission; and atomic absorption. Studies of solvent extractions and chromatographic methods of separation, such as gas-liquid chromatography and liquid chromatography. (Laboratory fee.) *The required laboratory is CHM 4229, Lab for CHM 4223. Prereq. CHM 4222 or equiv.*

CHM 4224 Analytical Chemistry (Lectures and lab., 4 q.h., summer quarter only)
Principles and theories of volumetric, gravimetric, and instrumental analysis. Application made in the laboratory with analysis of unknown samples. (Laboratory fee.) *The required laboratory is CHM 4226, Lab for CHM 4224. Prereq. CHM 4113 or equiv.*

CHM 4261 Organic Chemistry 1 (2 cl., 4 lab. and discussion, 4 q.h.)
Nature of carbon in organic compounds. General principles of structure, nomenclature, preparation, uses, and reactions of aliphatic hydrocarbons: alkanes, alkenes, alkynes, dienes, cycloalkanes. Position and geometric isomerism. Introduces free radical and ionic mechanisms of reactions. The laboratory generally deals with the preparation and properties of compounds discussed in the lecture. (Laboratory fee.) *The required laboratory is CHM 4267, Lab for CHM 4261. Prereq. CHM 4113 or equiv.*

CHM 4262 Organic Chemistry 2 (2 cl., 4 lab. and discussion, 4 q.h.)
Structure of benzene, electrophilic aromatic substitution reactions. General principles of structure, nomenclature, preparation, uses, and reactions of the various types of organic compounds, including alcohols, alkyl and aryl halides, ethers and epoxides, and carboxylic acids. Also covers optical isomerism and introductory chemical kinetics. The laboratory generally deals with the preparation and properties of compounds discussed. (Laboratory fee.) *The required laboratory is CHM 4268, Lab for CHM 4262. Prereq. CHM 4261 or equiv.*

CHM 4263 Organic Chemistry 3 (2 cl., 4 lab. and discussion, 4 q.h.)
Continuation of CHM 4262. Emphasizes the application of chemical conversions to synthetic problems. Includes functional derivatives of carboxylic acids, sulfonic acids and their derivatives, amines, diazonium compounds, phenols, aldehydes, and ketones. The laboratory generally deals with the preparation and properties of compounds discussed. (Laboratory fee.) *The required laboratory is*

CHM 4269, Lab for CHM 4263. Prereq. CHM 4262 or equiv.

CHM 4271 Introduction to Immunodiagnostics (3 q.h.)
Fundamentals of immunodiagnostics with emphasis on the application of principles to nursing, medical laboratory science, and biology. *Prereq. CHM 4113, BIO 4103 or equiv.*

CHM 4321 Instrumental Analysis 1 (3 cl., 3 q.h.)
Basic theory of electrochemistry and electrochemical methods of analysis, including electrode and cell potentials, potentiometric titrations, direct potentiometry (pH meters and specific ion electrodes), coulometry, voltammetry, polarography, electrogravimetry, and conductometric methods. *Prereq. CHM 4223 or equiv. (This course may serve as preparation for certain graduate courses.)*

CHM 4322 Instrumental Analysis 2 (3 cl., 3 q.h.)
Basic theory of absorption and emission spectroscopy, including ultraviolet and visible spectroscopy, molecular fluorescence and phosphorescence, atomic absorption spectroscopy (flame, arc, spark, and plasma), and infrared and X-ray spectroscopy. *Prereq. CHM 4321 or equiv. (This course may serve as preparation for certain graduate courses.)*

CHM 4323 Radiochemistry (3 cl., 3 q.h.)
Basics of radioisotopes, including basic physics; the atomic nucleus; properties and production of radioisotopes; properties of nuclear radiation; dose calculations; ionization chambers; proportional, Geiger-Muller, and crystal and liquid scintillation counters; and the statistics involved in counting radiation. *Prereq. CHM 4322 or equiv.*

CHM 4333 Chemical Separations (3 q.h.)
Theory of solvent extractions and chromatographic separations; gas chromatography, liquid chromatography, high liquid chromatography, thin layer chromatography, paper chromatography. Chromatographic detectors. Mass spectrometry as utilized in tandem with chromatography methods for analysis of structures.

CHM 4371 Biochemistry 1 (3 cl., 3 q.h.)
Cellular organization, pH buffers, and the biochemistry of amino acids, proteins, enzymes, and vitamins. *Prereq. CHM 4263 or equiv.*

CHM 4372 Biochemistry 2 (3 cl., 3 q.h.)
Biochemistry of carbohydrates, lipids, and nucleic acids; bioenergetics; and the metabolism of carbohydrates. *Prereq. CHM 4371 or equiv.*

CHM 4373 Biochemistry 3 (3 cl., 3 q.h.)

Metabolism of lipids, amino acids, and nucleotides and the biosynthesis of proteins, DNA, and RNA. *Prereq.* CHM 4372 or *equiv.*

CHM 4381 Physical Chemistry 1 (3 cl., 3 q.h.)

Thermodynamics, thermochemistry, First and Second Laws, entropy, and free energy in spontaneous processes. *Prereq.* CHM 4113 or *equiv.*

CHM 4382 Physical Chemistry 2 (3 cl., 3 q.h.)

Chemical equilibria, acids and bases, electrochemistry, colligative properties, phase diagrams, thermodynamics of multicomponent systems, and kinetic molecular theory. *Prereq.* CHM 4381 or *equiv.*

CHM 4383 Physical Chemistry 3 (3 cl., 3 q.h.)

Kinetics, quantum chemistry, and photochemistry. *Prereq.* CHM 4382 or *equiv.*

CHM 4391 Introduction to Recombinant DNA Technology (3 q.h.)

Principles of gene manipulation in bacteria and yeasts. Principles and methods of gene cloning and splicing.

CHM 4392 Affinity Chromatography in Biological Separations (3 q.h.)

Principles and practice of affinity chromatography as utilized in separation and purification of biomolecules. *Prereq.* CHM 4263 or *equiv.* *Required laboratory* CHM 4394.

CHM 4700 Advanced Tutorial 1 (4 q.h.)

Opportunity to undertake upper level course independently. See page 16 for details. *Prereq.* 87 q.h.

CHM 4701 Advanced Tutorial 2 (3 q.h.)

See CHM 4700.

CHM 4801 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

CRIMINAL JUSTICE**CJ 4101 Administration of Criminal Justice** (3 q.h.)

Survey of the contemporary criminal justice system from initial contact with the offender through prosecution, disposition, incarceration, and release to the community. Emphasis on major systems of social control: police, corrections, juvenile justice, mental health systems, and their policies and practices relative to the offender. Legal, empirical, and sociological materials covered.

CJ 4102 Crime Prevention and Security (3 q.h.)

Introduction to the concept that all citizens are responsible for preventing crime and promoting security. Content ranges from the theoretical

level to community, organization, and personal strategies necessary to prevent crime.

CJ 4103 Criminology (3 q.h.)

Classical and contemporary criminological theories. Examines their historical development and empirical bases, as well as their significance to the criminal justice process and the rehabilitation/deterrence/punishment of offenders.

CJ 4104 Dimensions of Crime (3 q.h.)

An examination of empirical knowledge about crime: the magnitude of the crime problem in the United States; characteristics of those who commit crimes; information about dangerous repeat offenders; characteristics of victims; and financial costs of crime to neighborhoods and communities. Assessment of the strengths and weaknesses of current crime measurement techniques, especially the Uniform Crime Reports and victimization surveys.

CJ 4105 Computer Applications in Criminal Justice (3 q.h.)

A survey of computer technology applications to criminal justice research and decision-making in criminal justice agencies. Topics include statistical and data-base software, data-base management, word processing, computer mapping, forecasting techniques, simulations and modeling, and mainframe relations.

CJ 4106 Criminal Justice Research 1 (3 q.h.)

A survey of methods for basic and applied research in criminal justice, combining statistics and research methods. Examines research techniques in criminal justice including interviews, questionnaires, observations, and scales for survey analysis. Issues of measurement and casual reasoning examined in regard to criminal justice research.

CJ 4107 Criminal Justice Research 2 (3 q.h.)

An extension of Criminal Justice Research 1. Focuses on the uses of statistics, with special reference to use of data from the field of criminal justice. Covers basic descriptive statistics, including measures of central tendency, tests of significance, probability, sampling, and methods of forecasting.

Concentrates on research application by stressing discussion of the general role of research in the discipline and specific contributions advanced by studies in the field. *Prereq.* CJ 4106.

CJ 4108 Criminal Law and Procedure 1 (3 q.h.)

Examination of the concepts, responsibilities, and liabilities of criminal law and procedure. Reviews the evolution of the criminal law system. Topics include an analysis of substantive criminal law and the procedural process, as well as basic definitions; discussions of interaction between federal and state constitutions as they relate to criminal law.

CJ 4109 Criminal Law and Procedure 2 (3 q.h.)

Application of vital constitutional and statutory concepts, including selected statutory crimes, law of arrest, right to counsel, search and seizure, and applicable criminal procedures. Students are expected to be familiar with basic concepts as well as changing interpretations so that they can cite cases to support their conclusions. *Prereq. CJ 4108.*

CJ 4110 Constitutional Law (3 q.h.)

The history and development of the U.S. Constitution and Amendments using text commentary and case analysis. Topics include the Commerce Clause, procedural due process, state's rights, individual rights and civil liberties, the concept of federal supremacy, and state constitutions. *Prereq. CJ 4109.*

CJ 4201 Criminal Investigation 1 (3 q.h.)

The evolution of contemporary investigative techniques. Topics include investigative effectiveness and organization, and modern investigative techniques, especially as they relate to particular crimes such as arson, sexual offenses, larceny, burglary, robbery, forgery, and homicide.

CJ 4202 Criminal Investigation 2 (3 q.h.)

Continuation of Criminal Investigation 1. Focuses on staffing the investigation unit, informational management, control of evidence, establishment of investigative priorities, fiscal restraints, and the relationship between criminal investigation and patrol and special units. Examines special police operations such as electronic surveillance, raids, and undercover operations; affidavit construction, court preparation, and the use of scientific methods; and Federal law with regard to due process and other constitutional protections. *Prereq. CJ 4201.*

CJ 4203 Criminalistics 1 (3 q.h.)

Survey of the elements of microscopy, spectroscopy, and basic chemistry as they apply to the study of materials that comprise physical evidence. Covers the procedures for searching, sketching, and photographing crime scenes as

well as the recognition, collection, marking, and handling of physical evidence, emphasizing the importance of maintaining the chemical integrity of each sample. Studies the types of analysis, their value and limitations with regard to glass, soil, hairs and fibers, firearms, toolmarks, and questioned documents.

CJ 4204 Criminalistics 2 (3 q.h.)

An introduction to the analysis of biological items of physical evidence collected at the scene of the crime or submitted for laboratory examination, and to the fields of serology and toxicology. Covers methods of collecting samples and the value of blood distribution patterns, as well as laboratory techniques used to identify and characterize blood stains and other body fluids. Pharmacology and toxicology of medical and chemical substances having potential for misuse and abuse are studied. Includes laboratory demonstrations and practical exercises to examine types of physical evidence, including gunshot residue, paints and polymers, and arson and explosive residues. *Prereq. CJ 4203.*

CJ 4205 Patrol Theory and Administration 1 (3 q.h.)

History of the evolution of patrol practices; the changing patrol function over time; the history of patrol management and supervision; the development of preventive patrol and rapid response to calls for service; theories of patrol allocation; the influence of operations research; the development of community relations as an adjunct to patrol.

CJ 4206 Patrol Theory and Administration 2 (3 q.h.)

Contemporary patrol developments and functioning: directed patrol, team and community policing, the re-emergence of foot patrol, the legacy of community relations; neighborhood beat construction, patrol management and supervision; and current patrol research.

CJ 4207 Comparative Police Systems (3 q.h.)

Comparative study of police systems in Anglo-Saxon, Continental, Asian, Russian, African, and other cultural traditions with focus on the influence of nineteenth-century English and twentieth-century American police traditions on policing systems in other cultures and countries.

CJ 4208 Police Operations (3 q.h.)

A general survey of police operational procedures, including traffic safety and control, report writing, interviews and interrogations, and identification and records.

CJ 4209 Police Management 1 (3 q.h.)

Introduction to the philosophy and theories of management in policing. Historical view of the development of "professional/bureaucratic" managerial approach in policing. The development of organizational strategy; and understanding and managing the external environment within which police operate.

CJ 4210 Police Management 2 (3 q.h.)

Internal management of police organizations: policy development, implementation, maintenance of ongoing operations, and evaluation of program outcomes.

CJ 4211 Police and Social Problems (3 q.h.)

Investigation of police functioning with regard to contemporary social problems: drugs, prostitution, domestic assault, gangs, serial murderers, dangerous offenders, illegal aliens, and others, with a special focus on related research into police functioning.

CJ 4212 Police Community Relations (3 q.h.)

The role and function of police with both individuals and groups, including minority groups; police responsibilities regarding civil rights, civil disorders, and public protection.

CJ 4213 Police Discretion (3 q.h.)

The nature and impact of discretion as it relates to police decision-making. Covers the forms of police discretion and ways in which it can be structured, confined, and checked. Students examine and learn to analyze sample police department policies and study different methods for their development. Students also study the relation of discretion to controlling police behavior and police corruption.

CJ 4301 American Correctional System (3 q.h.)

A critical analysis of the American system of corrections. Covers important historical developments and the range of treatment and/or punishment options available to government, including prisons, jails, reformatories and community treatment programs. Probation and parole are considered as an integral part of corrections. Current correctional philosophy and treatment approaches on federal, state, and local levels of government are assessed. The interrelated nature of all aspects of corrections is emphasized, with particular focus on policy analysis and decision-making.

CJ 4302 Correctional Administration 1 (3 q.h.)

An intensive examination of the American correctional process. Programs, services, standards, methods of service delivery, and contracting procedures are analyzed. Critical issues in personnel administration and management are discussed, as are the allocation of scarce resources and staff development and training programs. Stresses motivation, productivity, and accountability in corrections and the role of community outreach and interface programs and volunteer services.

Prereq. CJ 4301.

CJ 4303 Correctional Administration 2 (3 q.h.)

Continuation of intensive examination of the correctional process, with focus on special problems facing correctional administrators. Topics include the management of offenders with special needs (dangerous and/or violent offenders and inmates with histories of substance abuse); management and control of prison violence; and preventive techniques and programs. Also explored are institutional management of illegal immigrants and other special prisoners, as well as the special needs of female offenders. *Prereq. CJ 4302.*

CJ 4304 Jail Administration and Management (3 q.h.)

Study of local adult correctional institutions ranging from police lock-ups to jails and houses of corrections. Topics include administrative, management, and security issues; intake, regional, and network approaches; local versus state control; offender classification, programs, residential care, inspection, and standards; pretrial detention; staffing patterns; interface with courts and law enforcement; release programs; emergency management; and suicide prevention.

CJ 4305 Case Management and Correctional Services (3 q.h.)

An overview of treatment and rehabilitative work conducted in jail and prison environments. Basic counseling concepts and techniques, individual and group therapy, and institutional services are discussed. Case studies and class projects used to illustrate offender and inmate management in a variety of settings. Students study a range of innovative approaches in corrections and assess their fiscal and personnel requirements, and effectiveness. *Prereq. CJ 4301.*

CJ 4306 Correctional Security Methods and Technology (3 q.h.)

Examination of the technology and management methods that provide a secure, safe, and humane environment in which to incarcerate offenders while protecting both inmates and staff. A primary course objective is creating a correctional environment that supports productive human relations.

CJ 4307 The Rights of Offenders and Prisoners (3 q.h.)

Study of the rights of persons under correctional control. Examines traditional methods and assesses the magnitude and pace of judicial intervention in corrections. Topics include access to courts and legal services; health and medical care; searches; non-discriminatory treatment; rehabilitation; retention and restoration of rights; rules of conduct, disciplinary procedures; grievance procedures; exercise of religious beliefs and practices; and remedies for violations of an offender's rights.

CJ 4308 Correctional Counseling (3 q.h.)

Survey of basic counseling concepts and principles, individual and group therapy carried on in the correctional field, and institutional services. Case studies and projects. *Prereq. CJ 4301.*

CJ 4309 Comparative Correctional Systems (3 q.h.)

Correctional systems and practices in selected jurisdictions in the United States and other countries. Introduces students to innovative approaches in community corrections, local correctional institutions, prisons, alternatives to incarceration practices, rehabilitative and reintegrative programs, and improved management approaches. *Prereq. CJ 4301.*

CJ 4310 Community Corrections (3 q.h.)

The concept of community corrections from historical, philosophical, and pragmatic perspectives, and analysis of program options serving as alternatives to imprisonment or institutionalization. Discussions of program activities range from work and study release programs, family visiting furloughs, community-based correctional efforts aimed at helping offenders become law-abiding citizens. Topical issues include private and public programs, control and surveillance issues, residential and non-residential programs, marshalling and coordinating community resources, and volunteer involvement. Program and cost-effectiveness of community corrections, community safety, and managerial issues are also discussed. *Prereq. CJ 4301.*

CJ 4311 Probation and Parole (3 q.h.)

Introduction to probation and parole as dispositions, systems or subsystems, processes, and offender statuses. Includes the history of promotion and parole, their conditions and revocation procedures, offender eligibility requirements, supervision styles, due process issues, and prediction and measurements of effectiveness. The role of volunteers, and probation and parole officer responsibilities also discussed. Introduces students to presentence investigations, shock probation, probation subsidy, expansion of probation into pretrial and restitution programs, and to current debates on the governmental framework of probation and parole, parole boards, and parole hearings. *Prereq. CJ 4301.*

CJ 4312 Correctional Planning and Management (3 q.h.)

Issues and techniques of analysis, planning, and evaluation in corrections. Demonstrates how a correctional organization's climate, structure, and leadership style affect its responses to changing environmental conditions. Topics include long-, intermediate-, and short-range planning for administrative and operation functions; regional, state, and local planning techniques; capital and operations budgeting procedures; organizational goals and objectives; key social, economic, and functional influences; the development of monitoring, assessment, and evaluation procedures; corrections interfaces with the legislative and judicial branches of criminal justice; and the development of information systems vital to the improvement and effectiveness of the corrections mission. *Prereq. CJ 4301.*

CJ 4313 Correctional Institutions (3 q.h.)

The historical development of correctional institutions in the United States and present trends in correctional practices with focus on institutions. Topics include the characteristics of correctional facilities; issues of deterrence, rehabilitation, and reintegration, and the social environment for inmates and staff. Students discuss security issues, reception and classification, institutions for women, disciplinary and grievance procedures, and prerelease programs, as well as education and vocational training, religious, recreation, and counseling services, prison labor and industries. *Prereq. CJ 4301.*

CJ 4314 Classification of Offenders (3 q.h.)

Surveys major methods of classifying offenders and constructing offender typologies. Topics include classification for risk, security, management, and program assignments within institutions and for probation, parole, and related community programs. The reliability and validity of classification methodologies are assessed, as are their relevance to explaining criminal and deviant behavior. Also examined are classification systems at the local and state levels, suicide prevention techniques, and classification for reintegrative purposes, such as education, work-release, and furlough programs. *Prereq.* CJ 4301.

CJ 4403 Introduction to Security (3 q.h.)

The organization and administration of security and loss prevention programs in industry, business, and government. Emphasizes the protection of assets, personnel, and facilities, and the relations between security organizations and government agencies.

CJ 4404 Industrial Safety and Fire Prevention (3 q.h.)

Problems, methods, and technology in establishing safe working environments. Emphasizes the prevention of accidents and the effects of natural disasters with special focus on hazardous substance risks. *Prereq.* CJ 4403.

CJ 4405 Current Security Problems (3 q.h.)

Contemporary security problems affecting society including, but not limited to, white-collar crime, drug abuse, theft control, espionage and sabotage, and terrorism. *Prereq.* CJ 4403.

CJ 4406 Security Administration 1 (3 q.h.)

The historical basis of the security management function and the development of the field in general and its various specialties. Examines concepts of organizational security and risk-management methods. *Prereq.* CJ 4403.

CJ 4407 Security Administration 2 (3 q.h.)

Organization, administration, and management of the security function, including the systems approach to security operations. Focuses on planning, organizing, staffing, directing, controlling, representing, and innovating. The manager's responsibility is also explored.

CJ 4408 Legal Aspects of Security Management and Operations (3 q.h.)

Provides a comprehensive examination of the

legal environment and issues impacting security operations and management.

Elements of criminal, civil, property, regulatory, and business law are analyzed from the perspective of organizational security management concerns. Includes legal basis of security practices, civil liability, corporate security, investigations, labor law, industrial espionage, governmental security issues, and other relevant topics. *Prereq.* CJ 4403, CJ 4406, and CJ 4407.

CJ 4409 Physical Security Methods and Technology 1 (3 q.h.)

An examination of the management methods and technology that comprise a cost-efficient security program. Students develop planning and management skills to integrate personnel, equipment, and procedures with the goal of organizational security. Concentrates on the technologies of barriers, intrusion detection, security containers, and access control. *Prereq.* CJ 4403.

CJ 4410 Physical Security Methods and Technology 2 (3 q.h.)

A continuation of CJ 4410. Concentrates on the technologies of closed-circuit television, computer-assisted systems, information security, communications, merchandise protection, personnel protection, natural hazard detection and control, and aids to investigations. *Prereq.* CJ 4409.

CJ 4411 Electronic Information Security (3 q.h.)

Survey of the complex and developing security problems inherent in the use of electronic information systems. Provides a comprehensive examination of the management methods and technology used to counter the security risks related to the use of computers, word processors, and other communication devices and methods. *Prereq.* CJ 4403.

CJ 4501 Patterns of Criminal Behavior (3 q.h.)

Examination of the theories and research on the formation, structure, and basis for criminal behavior patterns. Surveys current knowledge concerning the various forms of criminal behavior. Topics include the construction of types of crime, the formulation and use of typologies of crime based on criminal behavior systems, and critical research on a range of criminal behavior patterns. *Prereq.* CJ 4103.

CJ 4502 Fire Investigation, Arson, and Explosives (3 q.h.)

Introduction to examination and behavior of fire, including fire-related phenomena such as convection, radiation, conduction, and igni-

tion. Arson, explosions, asphyxiations, and combustibility are addressed, with emphasis on the chemistry of other combustible materials. Sessions include the recovery, analysis, and evaluation of physical evidence from fires and explosions.

CJ 4503 Forensic Laboratory (3 q.h.)

A hands-on laboratory course focusing on individual experimentation. Surveys the basic examinations and techniques performed in a crime laboratory. Topics include general microscopy, hairs and fibers, blood and other body fluids, paint, glass, soil, fingerprints, gunshot residue, toxicology, questioned documents, and firearm and toolmark examinations. *Prereq.* CJ 4203 and CJ 4204.

CJ 4504 Juvenile Justice 1 (3 q.h.)

Examination of the contemporary juvenile justice system, with focus on the key decision points within the juvenile justice system including jurisdiction, police, detention, court intake, adjudication, disposition, and aftercare. Critical issues facing the juvenile justice system components are discussed.

CJ 4505 Juvenile Justice 2 (3 q.h.)

Continuation of material discussed in CJ 4504. In particular, consideration is given to the history of juvenile justice in the U.S.; the major reforms of the juvenile justice system (diversion, the development of due process, decriminalization of status offenders, deinstitutionalization, and waiver to adult court); and future trends in juvenile justice. *Prereq.* CJ 4504.

CJ 4506 Crime Victims (3 q.h.)

Examination of current theories and research relating to victims of crime. Particular attention to special victim groups such as children, the elderly, and women. Victim interactions with the criminal justice system are explored. Current victim initiatives such as restitution, mediation, compensation, and victim rights legislation are also assessed. *Prereq.* CJ 4101 and CJ 4103.

CJ 4507 Organized Crime (3 q.h.)

The nature and problems of organized crime, its causes and effects, comparative and historic roots, and activities, organization, and economics. Considers possible solutions and the scope of techniques used in combating organized crime.

CJ 4508 Crime Scene Investigation (3 q.h.)

A competent search of a crime scene demands specialized training. This course covers certain basic considerations, guidelines, and pro-

cedures that help the crime scene technician avoid oversight, ensure thoroughness of search, and comply with both the legal and scientific requirements pertaining to the use of physical evidence. The procedures for recording the crime scene--i.e., note-taking, sketching, and photography--as well as the basic steps that minimize the omission or contamination of evidence are studied in detail.

CJ 4509 White-Collar Crime (3 q.h.)

Basic survey of white-collar crime. The nature and extent of white-collar crime, the social-psychological makeup of white-collar crime typologies, present efforts directed toward its control, and interagency and jurisdictional problems and the benefits of cooperation.

CJ 4510 Terrorism (3 q.h.)

An overview of what terrorism is and why it has become so popular. Topics include the role of news media, political consequences of terrorism, the military as a resource, and the role of the hostage.

CJ 4511 Survey of Criminal Evidence (3 q.h.)

The fundamentals of criminal trial procedure and the rules of evidence as they apply to the trial of a criminal case. Students read and brief criminal court cases. *Prereq.* CJ 4108 and CJ 4109.

CJ 4512 Women and the Criminal Justice System (3 q.h.)

Introduction to issues relating to roles taken by women involved with the criminal justice system and to the system's various responses to women in these roles. Specific focus on women as victims of crime, as offenders, and as practitioners.

CJ 4701 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17.

CJ 4702 Independent Study 2 (3 q.h.)

See CJ 4701.

CJ 4703 Independent Study 3 (3 q.h.)

See CJ 4701.

CJ 4805 Advanced Tutorial 1 (3 q.h.)

Opportunity to take upper level course independently. See page 16 for details.

CJ 4806 Advanced Tutorial 2 (3 q.h.)

See CJ 4805.

CJ 4811 Advanced Tutorial Intensive (6 q.h.)

Opportunity to take upper level course sequence independently. See page 16 for details.

COMPUTER LITERACY

COM 4101 Foundations of Computer Literacy (4 q.h.)

Introduction to computers, including database management, word processing, systems analysis and design, software packages, artificial intelligence, and trends in specialized types of office automation. Students have the opportunity to learn to program in BASIC. Hands-on labs reinforce lectures.

DRAMA

DRA 4101 Introduction to Theatre (3 q.h.)

How a theatrical performance is made through the eyes of those who make it: writers, producers, actors, designers, and audience. Designed to increase the student's awareness of theatre as a business as well as to provide a basis for enjoyment of theatre as an art form dealing with ideas and emotion. Visits to local theatres and viewing of performances in the Boston area. Guest lectures by practicing professionals. Cost of theatre tickets not included in tuition.

DRA 4120 Acting for the Non-Actor (3 q.h.)

Shakespeare said "All the world's a stage . . ." We are all actors in our private and professional lives. Basic acting principles and performance experiences can benefit anyone who interacts with other people. This course deals with stress, relaxation, presentation of self, status in relationships, and performance anxieties. Acting exercises assist the student in finding methods for dealing comfortably and positively with real-life situations.

DRA 4130 Prizewinning Plays (3 q.h.)

What makes a play win a Pulitzer Prize or a Tony Award? To find out, students examine selected plays that have received one or more of these prizes.

DRA 4140 Introduction to Acting 1 (formerly Workshop for the Actor 1) (3 q.h.)

Physical preparation for the actor, including basic stage movement and deportment, control of the stage voice, analysis and establishment of characterization through observation and awareness of the body, and improvisations and short scenes.

DRA 4141 Introduction to Acting 2 (formerly Workshop for the Actor 2) (3 q.h.)

Psychological preparation for the actor, including analysis and establishment of characterization through memory, emotion, imagination, and recall; analysis of specific roles; the creation of a character analysis book; and improvisations and short scenes. *Prereq.* DRA 4140 or instructor's permission.

DRA 4142 Acting 3 (formerly Workshop for the Actor 3) (3 q.h.)

Preparing and performing the role, including the physical and psychological preparation of specific roles. Also includes short classroom scenes and the presentation of a one-act play. *Prereq.* DRA 4141 or permission of instructor.

DRA 4150 Introductory Mime Workshop (3 q.h.)

In-depth introduction to mime, featuring illusionary technique, silent acting, and the creation of material for mime theatre.

DRA 4151 Acting for the Camera (3 q.h.)

The adaptation of theatre acting techniques to the camera. In-studio experiences relative to the performer's physical and vocal persona in creating a character, developing the role and revealing the personality. On-camera involvement in short dramatic pieces. (Laboratory fee.)

DRA 4152 Acting for Commercials (3 q.h.)

Understanding the "art" of movement and gesture in commercials; with commercial terminology and procedures; with manipulating commercial dialogue as well as handling the "product." In-studio/on-camera practice with commercial scripts. (Laboratory fee.)

DRA 4153 Acting for Voice Overs (3 q.h.)

The use of the voice for "selling" a product or service. Understanding microphone and sound booth techniques. Developing your own "voices;" analyzing commercial dialogue and speaking it effectively. (Laboratory fee.)

DRA 4160 Drama Movement and Therapy (3 q.h.)

Exploration of teaching and rehabilitative methods using the techniques of creative dramatics and dance/movement therapy. Emphasizes the exceptional child and the physically and emotionally handicapped.

DRA 4170 Creative Dramatics for Teachers (3 q.h.)

Introduction to the methods and creative techniques of using dramatics for programs in schools, churches, and recreational facilities. Teachers can learn how to use improvisation for self-improvement with students of all ages.

DRA 4200 The Comic Theatre (3 q.h.)

Comic performance, from its beginnings in ancient Greece through its use in radio and television sitcoms, movies, and by stand-up comedians. Includes an examination of comic theory, the comic writer, and the comic performer. The course centers around the basic notion that "comedy is serious business." Lectures, movie and television viewing, and attendance at live performances. Cost of theatre tickets not included in tuition.

DRA 4230 The Boston Theatre Scene (3 q.h.)

Opportunity to view and critique live performances presented in the Boston area's major and "off-Broadway" theatres. Cost of theatre tickets not included in tuition.

DRA 4250 Theatre Movement (3 q.h.)

Deals with relaxation, concentration, and the use of the body to free the emotional self.

DRA 4260 Theatre Speech (3 q.h.)

Focuses on vocal technique and speech problems unique to actors performing in contemporary and classical theatre.

ECONOMICS**ECN 4001 Overcoming Statistics Stress** (noncredit)

This seminar is designed to show students how to put aside anxieties by understanding the components of statistics and developing techniques to simplify seemingly difficult word problems. Mathematical skills needed include addition, subtraction, division, multiplication, knowledge of square roots, and basic algebra.

ECN 4115 Economic Principles and Problems 1

(3 q.h.)

Application of the basic principles of economics to current public problems. Focusing on macroeconomics, students explore unemployment, inflation, national income and employment theory, and government expenditures and taxation.

ECN 4116 Economic Principles and Problems 2

(3 q.h.)

Continuation of ECN 4115, focusing on the role of the banking system, the Federal Reserve System, and supply-side policies. Topics in microeconomics include the role of a market pricing system; supply and demand, the costs of production; profits; and the supply decision. *Prereq.* ECN 4115 or equiv.

ECN 4117 Economic Principles and Problems 3 (3 q.h.)

Continuation of ECN 4116, focusing on markets and the allocation of resources. Topics include competitive markets, monopoly, oligopoly, factor markets, and income distribution. Economic principles are applied to selected problem areas, including poverty, pollution, energy, international trade, and the balance of payments. *Prereq.* ECN 4116 or equiv.

ECN 4118 Economics (Intensive) (9 q.h.)

Same as ECN 4115, ECN 4116, and ECN 4117.

ECN 4130 Medical Economics (3 q.h.)

Topics include health care trends in the United States; causes for increases in medical care costs; supply and training of health care personnel; the nation's need for physicians, nurses, pharmacists, and other allied health personnel; the quality of medical care; economics of health insurance plans; and consumer demand for health care, medical facilities, and professional and semiprofessional personnel.

ECN 4137 History of Economic Thought (3 q.h.)

Development of economic thought, including Mercantilism as the first economic doctrine; analysis of the older, classical school with its later refinements (Modern Marginalism) and its important critics (socialists, Marxists); and Keynesian and modern developments.

ECN 4140 Economics of Crime (3 q.h.)

Theoretical and empirical analyses of the economic causes of criminal behavior. The social costs of crime, its prevention, and techniques for designing optimum law enforcement policies.

ECN 4150 Energy Economics (3 q.h.)

Economic, political, and historical background of energy and other resource problems, including examination of the future impact of primary resource limitations on U.S. and world economics and feasibility studies of resource substitution.

ECN 4215 Macroeconomic Theory (3 q.h.)

A discussion of conceptual and empirical problems of creating and using national accounts; price index problems; conceptual and empirical evaluation of several consumption and investment functions and their policy implications; and multiplier and accelerator models. Includes a brief history of recent cyclical fluctuations as well as an analysis of inflation and growth theories in light of recent economic history. *Prereq.* ECN 4117 or equiv.

ECN 4216 Microeconomic Theory (3 q.h.)

Topics include supply and demand analysis, elasticity concepts and applications, theory of consumer demand, theory of production, and derivation of cost curves. Also, pricing and output behavior in the several market structures, their welfare implications, and the pricing of resources. *Prereq.* ECN 4117 or equiv.

ECN 4250 Statistics 1 (3 q.h.)

Introduction to the collection and organization of data, including the measurement, presentation, and uses of elementary set theory; measures of central tendency and variability; basic probability; and probability distributions.

ECN 4251 Statistics 2 (3 q.h.)

Sampling and basic estimation techniques, "t" distribution, testing of statistical hypotheses, and analysis of variances. *Prereq.* ECN 4250 or equiv.

ECN 4252 Statistics 3 (3 q.h.)

Methods of econometric estimation and forecasting, including linear regression analysis, correlation analysis, time series analysis, and index numbers. *Prereq.* ECN 4251 or equiv.

ECN 4253 Statistics Intensive A (formerly Statistics Intensive) (9 q.h.)

Same as ECN 4250, ECN 4251, and ECN 4252.

ECN 4254 Statistics Intensive B (6 q.h.)

Same as ECN 4250 and ECN 4251.

ECN 4255 Hands-On Statistics (4 q.h.)

Statistics techniques and applications, including frequency distributions, measures of central tendency, measures of dispersion, probability and probability distributions, and sampling and estimation techniques. Class time is divided equally into lecture and laboratory; the latter focuses on individual, supervised problem solving. *Not open to students who have taken ECN 4250.*

ECN 4310 Labor Economics (3 q.h.)

Economic analysis of the labor market, including the labor force, the demand for labor, and the institutions and policies dealing with them. Examines employment, unemployment, wage determination, and the development and efficient use of labor resources as well as collective bargaining issues and their economic consequences. *Prereq.* ECN 4117 or equiv.

ECN 4311 Human Resource Planning (3 q.h.)

Assessment of government and private efforts to fight poverty and improve the labor market position of impoverished groups. Considers the relationship between causes of poverty and discrimination and possible remedies. Also considers training programs, negative income tax, family allowances, and other income maintenance schemes.

ECN 4312 Economic Concerns of Older Adults (3 q.h.)

Designed to provide a basic knowledge of economic principles as they apply to senior members of the community. Includes how the U.S. economic policies and market system determine the price, quality, and availability of medical care and other allied services.

ECN 5312 Economic Concerns of Older Adults (3 CEUs)

Same as ECN 4312.

ECN 4313 Women in the Labor Force (3 q.h.)

Economic analysis of women's labor market position in the context of the changing economic structure and labor market institutions. Analysis of female labor force participation differences; male-female differentials in earnings and unemployment; occupational concentration, occupational segregation; theories and evidence of sex discrimination; and new opportunities for women.

ECN 4315 Income Inequality and Discrimination (3 q.h.)

Analysis of the composition of impoverished groups and recent trends. Examines the labor market, demographic and institutional forces contributing to poverty, the role of education, the economics of race and sex discrimination, the public welfare system, and proposed reforms.

ECN 4321 Urban Economic Problems and Policies (3 q.h.)

Economic analysis of selected urban problems such as housing, poverty, transportation, education, health, crime, and the urban environment. Includes discussion of public policies relating to such problems.

ECN 4322 Economics of Transportation (3 q.h.)

Transportation and land-use patterns, ownership, regulations, financing, social costs and benefits of various modes of transportation, and economics of new technology.

ECN 4323 Environmental Economics (3 q.h.)

(formerly Economics of the Quality of Urban Environment and Control)

Economic analysis of air, water, thermal, and noise pollution. The utilization of urban space and other urban resources; identification of possible economic effects of urban environment, such as crime, delinquency, immobility, and congestion.

ECN 4330 Economic Growth and Development (3 q.h.)

Prospects for economic growth and development in impoverished nations as indicated by economic analysis and historical experience. Includes the social, cultural, and institutional determinants of growth and an analysis of agriculture and development.

ECN 4331 American Economic History (3 q.h.)

Economic development of the United States, with emphasis on the post-Civil War period and the effect of certain European developments.

ECN 4333 European Economic Development (3 q.h.)

Historical survey of European economic development from overseas expansion to the dissolution of empires and the Common Market. Examines the environmental impact of industrialism and the implications of living in a technological society.

ECN 4334 Comparative Economic Systems (3 q.h.)

Competing types of theoretical economic systems; analysis of the organization and operation of currently existing types of communist, socialist, and capitalist economies; and comparison and evaluation of the economic behavior and performance of different economic systems.

ECN 4335 International Trade (3 q.h.)

(formerly International Economics 1)
Economics of international trade, including tariffs, use of resources, and balance-of-payment mechanisms. *Prereq. ECN 4117 or equiv.*

ECN 4336 International Monetary Economics (3 q.h.)

(formerly International Economics 2)
International commercial policy, financial organizations, and recent problems. *Prereq. ECN 4335 or equiv.*

ECN 4341 Money and Banking Intensive (6 q.h.)

Same as ECN 4342 and 4343. *Prereq. ECN 4117 or equiv.*

ECN 4342 Money and Banking 1 (3 q.h.)

Introduction to money and credit, commercial banking structure, and money creation as well as the problems and policies of centralized banking in the United States. *Prereq. ECN 4117 or equiv.*

ECN 4343 Money and Banking 2 (3 q.h.)

Topics include theory of money, prices, and monetary policy; interest theory; debt management; and international monetary problems and analysis. *Prereq. ECN 4342 or equiv.*

ECN 4344 Government Finance (3 q.h.)

Topics include fiscal functions, institutions, and politics; growth of the public sector; expenditure planning in theory and practice; cost-benefit analysis; principles of taxation and tax incidence; major taxes at federal, state, and local levels; fiscal policy for high employment, price stability, and growth; and current fiscal problems, such as tax reform, urban fiscal problems, fiscal federalism, and income maintenance programs. *Prereq. ECN 4117 or equiv.*

ECN 4345 Business Cycles 1 (3 q.h.)

Intermediate macroeconomic theory, including theory of cyclical fluctuations in the context of multiplier and accelerator models. *Prereq. ECN 4117 or equiv.*

ECN 4346 Business Cycles 2 (3 q.h.)

Business cycle analysis, measurement, and public policy. *Prereq. ECN 4345 or equiv.*

ECN 4347 Business Cycles 3 (3 q.h.)

Business cycle forecasting methods and services. *Prereq. ECN 4346 or equiv.*

ECN 4348 Business Cycles (Intensive) (9 q.h.)

Same as ECN 4345, ECN 4346, and ECN 4347. *Prereq. ECN 4117 or equiv.*

ECN 4350 Introduction to Econometrics (3 q.h.)

Methods of econometric estimation and forecasting, including various statistical techniques. Students are given the opportunity to construct their own models and use computer facilities for estimation and forecasting. *Prereq. ECN 4117 and ECN 4252.*

ECN 4351 Problems in Economic Research (3 q.h.)

Research methods used by practicing economists. Topics include typical problems from areas of applied economics, such as choices of modeling framework, development of static and dynamic adaptive policy models, problems of data collection, review of estimation techniques, and interpretation of results. *Prereq. ECN 4117 and ECN 4252.*

ECN 4353 Introduction to Mathematical Economics (3 q.h.)

Introduction to mathematical analysis, with an in-depth study of theory of distribution. *Prereq. ECN 4117 or equiv.*

ECN 4360 Managerial Economics (3 q.h.)

Theory of demand, price, and output as applied to business firms and capital budgeting. *Prereq. ECN 4117 or equiv.*

ECN 4362 Industrial Organization and Public Policy (3 q.h.)

Theoretical framework for analysis and evaluation of the static and dynamic performance of real markets. Examines empirical studies that test the usefulness of applying theory to real markets and the existence of antitrust laws as a public policy designed to promote better market performance. *Prereq. ECN 4117 or equiv.*

ECN 4363 Government and Business 1 (3 q.h.)

The rationale for government involvement in markets, the role of government in national economic affairs, and the relationship between government and business, including the application of antitrust laws to business.

ECN 4364 Government and Business 2 (3 q.h.)

The government's role in economic activities. The relationships between the government and industry, labor, agriculture, public utilities, and consumers. The changing role of government from laissez-faire policy to direct intervention in the economy. Wage and price controls, environment and antipollution policies, consumer protection, conglomerate mergers, and regulation of industries.

ECN 4384 The Economics of the Stock Market (3 q.h.)

Topics include the organization of the stock exchange, the highly speculative nature of the stock exchanges, the functions of the exchanges, capital gains, equity, dividends, stock options, splits, puts and calls, the crash of 1929, the crash of 1987, the Great Depression, controls on the stock market, and the Federal Reserve Board.

ECN 4492 Economic Policy Seminar (3 q.h.)

Most advanced course for senior economic majors, with emphasis on independent study and contemporary issues. *Prereq.* ECN4117 or equiv.

ECN 4495 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 q.p.a.

ECN 4496 Honors Program 2 (4 q.h.)

See ECN 4495.

ECN 4497 Honors Program 3 (4 q.h.)

See ECN 4495.

ECN 4500 Advanced Tutorial 1 (3 q.h.)

Opportunity to take an upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.

ECN 4501 Advanced Tutorial 2 (3 q.h.)

See ECN 4500.

ECN 4510 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

ECN 4511 Independent Study 2 (3 q.h.)

See ECN 4510.

ECN 4512 Independent Study 3 (3 q.h.)

See ECN 4510.

ECN 4601 Economics 1 (4 q.h.)

Development of macroeconomic analysis, review of national income concepts, national income determination fluctuation and growth, the role of the banking system and the Federal Reserve system, government expenditures and taxation, international trade, and balance of international payments. *For Alternative Freshmen Year Students only.*

EDUCATIONAL SKILLS**ED 4001 Integrated Language Skills Development 1 (2 q.h.)**

Reading comprehension and related study and language skills. Time, discussion, and considerable practice devoted to meaning skills such as basic reading comprehension and interpretation, including work in critical reading and other interpretational acts (inferences, understanding imagery, and symbolic usage). Study skills, previewing, finding main ideas and details, outlining and summarizing, and interaction of all the communications skills—reading, writing, listening, and speaking. *For Alternative Freshmen-Year students only.*

ED 4002 Integrated Language Skills Development 2 (2 q.h.)

Continuation of ED 4001. *For Alternative Freshmen-Year students only. Prereq.* ED 4001.

ED 4003 Integrated Language Skills A (4 q.h.)

Covers basic reading comprehension and interpretation; study skills such as previewing, finding main ideas and details, outlining, and summarizing; and the interaction of communications skills, such as reading, writing, listening, and speaking. *For Alternative Freshmen-Year students only.*

ED 4004 Integrated Language Skills B (4 q.h.)

Continuation of ED 4003, emphasizing such study skills as researching, writing, and organizing term papers. Explores critical thinking in relation to the learning process. How to choose an academic major and career direction are also addressed, with emphasis on self-assessment and personal decision-making. *For Alternative Freshmen-Year students only. Prereq.* ED 4003.

ED 4050 College Reading and Study Skills (3 q.h.)

Reading comprehension, text and lecture note-taking skills, and examination-taking skills. Students practice with excerpts from texts and taped lectures, and apply the skills to materials in other courses. Intended for students who are beginning college work and wish to develop reading and study skills. (Not for students who have already taken the Basic Day College courses Reading/Study Skills 1 or Integrated Language Skills Development 1.)

EMERGENCY MEDICAL SERVICES

EMS 4107 EMT-Basic (9 q.h.)

The course covers evaluation and management of the following medical emergencies; cardiopulmonary arrest, severe bleeding and shock; fractured bones; care for heart attack, stroke, burn and poisoning victims; extrication and removal of victims from crashed vehicles and collapsed buildings; emergency childbirth and various other medical, emotional and environmental emergencies.

EMT-Basic includes: 6 hours of class weekly for 12 weeks. Two (2) all day Saturday exercises (combination of indoor and outdoor) that include practical demonstration of ambulance and/or emergency vehicles and techniques. Ten (10) hours of in-hospital emergency room observation.

EMT Basic Skills: CPR (cardiopulmonary resuscitation), obstructed airway maneuvers, control of bleeding, taking vital signs (pulse/respiration/blood pressure), patient assessment, bandaging and splinting, emergency carries and lifting and moving devices (ambulance and orthopedic stretchers, etc.), triage at multi-victim accident.

EMS 4117 Emergency Medical Services 1

(4 cl., 6 lab., 6 q.h.)

Introduction to the Paramedic Program: role and responsibilities of Paramedics, medical terminology, human systems, patient assessment, blood, fluids and electrolytes, shock and shock management. The laboratory component provides the opportunity to correlate didactic knowledge while developing psychomotor skills. *To receive credit for this course, you must also register for BIO 4178.*

EMS 4118 Emergency Medical Services 2

(4 cl., 6 lab., 6 q.h.)

Continuation of Paramedic Program: respiratory system, cardiovascular system, pathophysiology and emergency management, electrocardiograms, life-threatening dysrhythmias. The laboratory component provides the opportunity to correlate didactic knowledge while developing psychomotor skills. *Prereq. EMS 4117 or equiv.*

EMS 4119 Emergency Medical Services 3

(4 cl., 6 lab., 6 q.h.)

Continuation of Paramedic Program: central nervous system, soft tissue injuries, musculoskeletal system, medical emergencies, acute abdomen, genitourinary system, geriatric emergencies. The laboratory component provides the opportunity to correlate

didactic knowledge while developing psychomotor skills. *To receive credit for this course, you must also register for BIO 4179. Prereq. EMS 4118 or equiv.*

EMS 4120 Emergency Medical Services 4

(4 cl., 6 lab., 6 q.h.)

Continuation of Paramedic Program: obstetric/gynecologic emergencies, including emergency childbirth, neonatal and pediatric patients, emotionally disturbed patient stress management, gaining access and extrication, multiple casualty incidents, emergency communications. The laboratory component provides the opportunity to correlate didactic knowledge while developing psychomotor skills. *Prereq. EMS 4119 or equiv.*

EMS 4121 Emergency Medical Services 5

(27.5 lab., 11 q.h.)

Clinical Practicum I of the Paramedic Program: application of theoretical knowledge and psychomotor skills in hospital unit rotations. *Prereq. EMS 4120 or equiv.*

EMS 4122 Emergency Medical Services 6 (27.5 lab., 11 q.h.)

Clinical Practicum II of the Paramedic Program. *Prereq. EMS 4121 or equiv.*

EMS 4123 Emergency Medical Services 7

(100 lab., 3 q.h.)

Field internship component of the Paramedic Program: opportunity to practice and develop all necessary psychomotor skills on an urban advanced life support system. *Prereq. EMS 4122 or equiv.*

ENGLISH

ENG 4005 Introduction to English as a Second Language (noncredit)

Introduction to the grammar and rhetoric of English as a second language. Practice in listening, speaking, and writing, with selected readings and exercises for improving vocabulary and pronunciation.

ENG 4006 Intermediate English as a Second Language (noncredit)

Intermediate course in English as a second language. Practice in preparing written and oral reports, including business and social letters. *Prereq. ENG 4005 or equiv.*

ENG 4007 Advanced English for International Students (3 q.h.)

Advanced course in English as a second language. Practice in special forms of writing to improve clarity, syntax, and organization. *Prereq. ENG 4006 or instructor's permission.*

ENG 4011 Elements of Writing (3 q.h.)

Review of the structural patterns of current English. Practice in writing sentences, paragraphs, and short papers.

ENG 4012 Elements of Grammar (3 q.h.)

A study of grammar and the way the English language works. Helps students understand the parts of speech, the mechanics of punctuation, and the vagaries of spelling. Exercises in solving problems of number, case, tense, degree, and usage.

ENG 4013 Fundamentals of English 1 (4 q.h.)

Intensive introduction to the principles of effective expository writing, emphasizing description, paragraph construction, and organization. Includes a review of the conventions of English usage, punctuation, and syntax. Essay assignments. *For Alternative Freshmen Year Students only.*

ENG 4014 Fundamentals of English 2 (4 q.h.)

Intensive instruction in exposition, argument, and academic essay and research paper writing, in addition to continued study of the conventions of English usage, punctuation, and syntax. Essay assignments. *For Alternative Freshmen Year Students only. Prereq. ENG 4013 or equiv.*

ENG 4110 Critical Writing 1 (3 q.h.)

Detailed examination of the principles and methods of rhetoric, especially narration, description, and exposition. Includes frequent practice in writing paragraphs and themes in those modes. *A writing proficiency test is given at the first class meeting.*

ENG 4111 Critical Writing 2 (3 q.h.)

Continued examination of the principles and methods of rhetoric, especially persuasion and argument, the study of short fiction, and the development of research skills. Includes practice in writing persuasive and critical themes and in preparing research papers. *Prereq. ENG 4110 or equiv.*

ENG 4112 Approaches to Literature (3 q.h.)

Further refinement of writing and analytical skills through the study of drama and poetry. Practice in writing longer critical papers. *Prereq. ENG 4111 or equiv.*

ENG 4120 English Literature: Faith and Humanism (3 q.h.)

English literature from its beginnings to 1700, including works by Chaucer, Spenser, Shakespeare, Donne, and Milton.

ENG 4121 English Literature: Reason and Romanticism (3 q.h.)

English literature from the Neoclassical period to the Romantic age, including works by Pope, Swift, Johnson, Blake, Wordsworth, and Keats.

ENG 4122 English Literature: Victorians and Moderns (3 q.h.)

English literature from the Victorian Age through the twentieth century, including works by Browning, Arnold, Hardy, Yeats, and Eliot.

ENG 4123 Early American Literature: Faith, Reason, and Nature (3 q.h.)

American literature from its beginnings through the nineteenth-century Transcendentalists, including works by Bradstreet, Taylor, Edwards, Franklin, Emerson, and Thoreau.

ENG 4124 American Romantics and American Realists (3 q.h.)

The fiction and poetry of nineteenth-century America, including works by Hawthorne, Melville, Whitman, Dickinson, Twain, James, Crane, and Dreiser.

ENG 4125 American Literature: The Modern Temper (3 q.h.)

The prose and poetry of twentieth-century America, including works by Eliot, Stevens, Fitzgerald, Hemingway, Wright, and Plath.

ENG 4131 God, Gods, and Heroes: The Literature of the Ancient and Medieval Worlds (3 q.h.)

Literary traditions of the ancient world and the Middle Ages in the work of such writers as Homer, Virgil, Sophocles, Aristophanes, Dante, and Chaucer as well as in the art of biblical narrative.

ENG 4132 Man, Reason, and Imagination: Literature from the Renaissance to the Romantic Age (3 q.h.)

Literary traditions of the Renaissance, Neoclassicism, and Romanticism in the work of such writers as Shakespeare, Milton, Voltaire, Racine, Wordsworth, and Whitman.

ENG 4133 Order and Disorder: Literature of the Moderns (3 q.h.)

Literary traditions of Realism and Modernism in the work of such writers as Dostoyevsky, Ibsen, Joyce, Kafka, Woolf, and O'Neill.

ENG 4210 Science Fiction (3 q.h.)

Myths and rhetorical strategies of science fiction, including such novels as *Frankenstein*, *Childhood's End*, and *Stranger in a Strange Land*.

ENG 4211 Fantasy Literature (3 q.h.)

Exploration of fantasy literature of the nineteenth and twentieth centuries and its roots in myth, fairy-tales, and popular legends. Focuses on the works of such authors as T.H. White, Lewis Carroll, Lord Dunsany, Kenneth Grahame, Richard Adams, J.R.R. Tolkien, Ursula Le Guin, and Patricia McKillip.

ENG 4212 Horror Fiction (3 q.h.)

Horror literature and its concerns with the supernatural, the irrational, the nature of evil, and the landscape of dreams, including such novels as *Dracula*, *Dr. Jekyll and Mr. Hyde*, and *The Turn of the Screw*.

ENG 4213 Detective Fiction (3 q.h.)

Elements of intrigue, logic, and thought converge in this study of the whodunit. Students sample a wide range of detective fiction to explore the questions of innocence and guilt, action and responsibility, power and authority, and victim and victimizer, and to see connections between this popular form of literature and its classical antecedents.

ENG 4214 The Psychological Novel (3 q.h.)

A study of the mental and emotional processes affecting the form and style of such works as *Crime and Punishment*, *The Metamorphosis*, and *The Stranger*.

ENG 4220 Children's Literature (3 q.h.)

The psychology of creation, the ways of the imagination, and the role of fantasy and play in such children's books as *Alice in Wonderland*, *The Wizard of Oz*, and *Charlotte's Web*.

ENG 4221 Images of Women in Literature (3 q.h.)

Images of women and their underlying archetypes in imaginative literature. Includes such writers as Homer, Austen, Ibsen, and Lawrence.

ENG 4222 American Women Writers (3 q.h.)

Representative nineteenth- and twentieth-century American women writers, including such poets as Dickinson and Plath and such novelists as Chopin and Cather.

ENG 4223 British Women Writers (3 q.h.)

Important historical and thematic connections in the work of British women writers of the last two hundred years, including the novels of Austen, Eliot, Woolf, and Lessing.

ENG 4230 Modern Irish Literature (3 q.h.)

Irish literature in English from 1885 to the present, including such writers as Yeats, Joyce, O'Casey, and Behan.

ENG 4231 Irish Writers in America (3 q.h.)

Irish themes and attitudes in the fiction and drama of twentieth-century America, including such writers as O'Neill, Donleavy, Alfred, and McHale.

ENG 4232 Ethnic Literature in America (3 q.h.)

The range, variety, and themes of ethnic literature in America in the work of such writers as Philip Roth, Toni Morrison, Maxine Hong Kingston, and F. Scott Momaday.

ENG 4233 Outside the Mainstream: The Literature of America's Subcultures (3 q.h.)

Literature that reflects the specific interests, values, and concerns of America's diverse sub-cultural populations, including such works as *Black Elk Speaks*, *City of Night*, *Woman Warrior*, and the stories of Isaac Bashevis Singer.

ENG 4234 Modern American Voices: The New Essayists (3 q.h.)

Major nonfiction of the 1960s, 1970s, and 1980s, stressing the fresh styles and often disturbing cultural perspectives of such works as Mailer's *The Armies of the Night*, Pirsig's *Zen and the Art of Motorcycle Maintenance*, Dillard's *Pilgrim at Tinker Creek*, and Brautigan's *Trout Fishing in America* as well as the "new journalism" of such writers as Joan Didion, Tom Wolfe, Susan Sontag, and Woody Allen.

ENG 4235 The American Dream (3 q.h.)

Explores the American dream through images of the world of business in novels and plays, biographies and autobiographies, such as *The Rise of Silas Lapham*, *Death of a Salesman*, and *The Autobiography of Benjamin Franklin*.

ENG 4240 Fiction and the Movies (3 q.h.)

Reading and seeing: an examination of the success (and failure) of turning famous novels and stories into movies. Original works, such as *The Great Gatsby*, *Lolita*, *One Flew Over the Cuckoo's Nest*, and *Looking for Mr. Goodbar*, compared to film versions. Includes elementary film theory and criticism.

ENG 4241 Topics in Film (3 q.h.)

Examination of a theme or problem in film, a period in film history, a film genre, or the work of a particular director in order to assess technique and meaning. Topics change from quarter to quarter—for example, film and society, American films of the forties, the western, Hitchcock—so that students may take this course more than once.

ENG 4250 Biography and Nonfiction (3 q.h.)

Study of biography in an attempt to understand how individual behavior and achievement relate to social, cultural, political, and artistic values.

ENG 4260 The Literature of Adolescence (3 q.h.)

Adolescence as depicted in works drawn from different cultures and times. Examines popular versus literary views of adolescence, focusing on such themes as the struggle for self-definition, the role of peers, and the effects of gender and class.

ENG 4261 The Literature of Old Age (3 q.h.)

Old age as depicted in works drawn from different cultures and times. Examines popular versus literary views of old age, focusing on such themes as old age as a period of psychological reassessment; the role of family, class, and gender; and the emotional implications of confronting death.

ENG 4349 Expository and Persuasive Writing 1 (3 q.h.)

Designed to help students develop confidence and proficiency in writing. Through first drafts to revisions, weekly writing assignments concentrate on mastering the skills of subject focus, clarity of expression, controlled development, and organization.
Prereq. ENG 4110 or equiv.

ENG 4350 Expository and Persuasive Writing 2 (3 q.h.)

Development of precise and persuasive writing patterns through experiments with various rhetorical strategies. Students are expected to write extensively on topics of current interest to gain fluency and to learn how to target their writing toward different audiences. Assignments also provide practice in persuasive writing and in using different writing models to gain control of the material.
Prereq. ENG 4349 or equiv.

ENG 4352 Expository Communications (3 q.h.)

Workshop in expository prose, emphasizing the practical problems of the writer on the job in advertising, public relations, or publishing. Includes practice in designing and writing special projects. *Prereq.* ENG 4349 or equiv.

ENG 4356 Creative Writing (3 q.h.)

An opportunity to write and develop a variety of forms, including experiments in journals and short stories, plays and poems. Features in-class discussion of students' work and a final project of choice.

ENG 4357 Creative Writing: Poetry (3 q.h.)

Practice in writing different forms of poetry for beginning poets. Includes discussion and criticism of student work and selected texts.

ENG 4358 Creative Writing: Fiction (3 q.h.)

Practice in writing various types of short stories for beginning writers of short fiction. Includes discussion and criticism of student work and selected texts.

ENG 4359 Creative Writing Workshop (3 q.h.)

Discussion and criticism of student manuscripts for practicing writers.

ENG 4360 Topics in Writing (3 q.h.)

An examination of a subject, genre, or figure in non-fiction prose, such as the language of politics, the informal essay, or the work of E. B. White. Because the topics change from quarter to quarter, students may take this course more than once, provided they focus on a different topic each time.

ENG 4363 Writing for the Marketplace (3 q.h.)

Workshop for writers venturing into the marketplace, designed to provide a working knowledge of the publishing industry and useful practice in preparing and editing manuscripts for publication. Includes the development of effective strategies for composing query letters, synopses, outlines, and sample manuscripts.

ENG 4380 Business Writing and Reports 1 (3 q.h.)

Introduction to the vocabulary and philosophy of business communications. Practice in planning, writing, and analyzing effective business letters and memoranda. *A writing proficiency test is given at the first class meeting.*

ENG 4381 Business Writing and Reports 2 (3 q.h.)

Methods and principles of research and documentation of semitechnical analyses and business reports. Practice in organizing and writing complex forms of business communications. *Prereq.* ENG 4380 or equiv. *No prereq. for Liberal Studies or Technical Communications degree candidates.*

ENG 4383 Business Writing and Reports (Intensive) (6 q.h.)

Same as ENG 4380 and ENG 4381. *A writing proficiency test is given at the first class meeting.*

ENG 4500 The English Language (3 q.h.)

Development of modern English from its pre-Anglo-Saxon beginnings. Effects of Roman, Scandinavian, and Norman invasions; dialect geography; evolutionary change; and word formation and borrowing.

ENG 4501 Linguistics (3 q.h.)

Theories of the nature and origin of language, review of historical and comparative linguistics, prescriptive and descriptive grammars, and structural and generative-transformational phonology, morphology, and syntax.

ENG 4502 Semantics (3 q.h.)

The relation between language and behavior, levels of abstraction in communication, habits of evaluation of linguistic phenomena, and the modification of such habits for human understanding and survival.

ENG 4600 Topics in Literature (3 q.h.)

Examination of a variety of subjects and themes, such as the relationship between literature and the arts; the censored novel; alienation; and the Holocaust. Because the topics change from quarter to quarter, students may take this course more than once, provided they focus on a different topic each time.

ENG 4604 Major Figures in Literature (3 q.h.)

Examines in detail and depth the work of a major writer of poetry, fiction, or drama, such as Walt Whitman, Leo Tolstoy, Virginia Woolf, or Samuel Beckett. Students may take this course more than once, provided they focus on a different figure each time.

ENG 4610 The American Short Story (3 q.h.)

Development of the American short story from its nineteenth-century origins to its present forms. Includes such writers as Poe, Hawthorne, James, Hemingway, Roth, and Updike.

ENG 4611 The American Novel (3 q.h.)

Development of the novel in America and its characteristic qualities. Includes such writers as Cooper, Melville, James, Wharton, Faulkner, and Ellison.

ENG 4612 Contemporary American Poetry (3 q.h.)

Structure and themes of poetry in post-1945 America. Includes such writers as Ginsberg, Plath, Snodgrass, and Wilbur.

ENG 4640 The Twentieth Century (3 q.h.)

The prose and poetry of such twentieth-century writers as Yeats, Eliot, Joyce, Lawrence, Woolf, Thomas, and Lessing.

ENG 4641 Contemporary English Poetry (3 q.h.)

Structure and themes of poetry in post-1945 England. Includes the work of Gunn, Hughes, and Larkin.

ENG 4642 The English Novel (3 q.h.)

Development of the English novel from its beginnings in the eighteenth century through its concern with manners and morals in the nineteenth century to the experimentation of the twentieth century. Includes such writers as Fielding, Richardson, Austen, Dickens, Eliot, and Woolf.

ENG 4649 European and English Short Story (3 q.h.)

Development of the short story in Europe and England in both the nineteenth and twentieth centuries. Includes such writers as de Maupassant, Balzac, Mann, Camus, Kipling, Lawrence, Greene, and Boll.

ENG 4650 Modern Bestsellers (3 q.h.)

The fascinating world of modern bestsellers, a world of romance and adventure, of high living and sinister intrigue, by such popular writers as Rona Jaffe, Harold Robbins, Jacqueline Susann, and Irving Wallace.

ENG 4651 The Continental Novel (3 q.h.)

Development of the European novel through its various forms and themes, from Balzac and Tolstoy to Proust and Mann.

ENG 4652 Russian Masterworks (3 q.h.)

The work of such Russian masters of the novel and the short story as Pushkin, Turgenev, Dostoyevsky, and Tolstoy in the nineteenth century and Zamyatin, Pasternak, Babel, and Solzhenitsyn in the twentieth.

ENG 4653 Latin American Fiction (3 q.h.)

The variety of Latin American fiction of the past generation of writers, such as Marquez and Puig, Borges and Cortazar, Bombal and Lispector.

ENG 4655 Contemporary Fiction (3 q.h.)

The range and variety of such post-1945 fiction writers as Bellow, Updike, Lessing, Gordimer, Baldwin, and Roth.

ENG 4658 Shakespeare the Dramatist (3 q.h.)

Detailed examination of representative plays from Shakespeare's early, middle, and late periods in order to illustrate his development as a dramatist and define his principal themes in such plays as *A Midsummer Night's Dream*, *Romeo and Juliet*, and *King Lear*.

ENG 4659 Shakespeare: The Major Tragedies and Comedies (3 q.h.)

Study of examples of Shakespeare's mature dramatic art, such as *As You Like It*, *Much Ado About Nothing*, *Hamlet*, *Macbeth*, and *Antony and Cleopatra*.

ENG 4662 The Bible as Literature (3 q.h.)

Studies selected books of both the Old Testament and New Testament as literature in an historical and cultural context.

ENG 4802 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 q.p.a.

ENG 4803 Honors Program 2 (4 q.h.)

See ENG 4802.

ENG 4804 Honors Program 3 (4 q.h.)

See ENG 4802.

ENG 4815 Advanced Tutorial 1 (3 q.h.)

Opportunity to take an upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.

ENG 4816 Advanced Tutorial 2 (3 q.h.)

See ENG 4815.

ENG 4820 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

ENG 4821 Independent Study 2 (3 q.h.)

See ENG 4820.

ENG 4822 Independent Study 3 (3 q.h.)

See ENG 4820.

EARTH SCIENCES

ESC 4103 Introduction to the Earth Sciences:

The Solid Earth (formerly ESC 4100, Earth Sciences 1) (3 q.h.)

Studies the differential structure of the solid Earth, including the components and forces responsible for the organization of its internal structure and for the formation and reshaping of its external surface.

ESC 4104 Introduction to the Earth Sciences:

The Fluid Earth (formerly ESC 4101, Earth Sciences 2) (3 q.h.)

Studies the liquid and gaseous components on and surrounding the solid Earth. Includes the way in which these components are organized, the factors and forces that differentiate them, the dynamics of the interactions between them, and the long-range consequences of their interactions in shaping and reshaping land masses.

ESC 4105 Introduction to the Earth Sciences:

The Celestial Earth (formerly ESC 4102, Earth Sciences 3) (3 q.h.)

An analysis of the Earth and its satellite, the moon, as objects in space. Includes their probable mode of origin, their physical characteristics of shape, mass, surface, magnetism, and differentiated motions; their usefulness as a model for understanding the other planets and satellites in the solar system, and how the solar system may serve as a model for understanding the universe.

ESC 4109 Introduction to the Earth Sciences (Intensive) (9 q.h.)

Same as ESC 4103, ESC 4104, and ESC 4105.

ESC 4203 Gemology (3 q.h.)

Topics include aspects of crystallography and physical properties of minerals relevant to

gemstones; gem cutting methods; origin of color in minerals; behavior of light in minerals and its influence on gem cutting; types of inclusions found in gemstones and their effects on optical properties (star sapphire, cat's eye); techniques of growing crystals; geology and geography of selected gem deposits; properties of the major types of gemstones and imitations. One or more field trips to local museums are scheduled.

ESC 4204 Physical Geology (3 q.h.)

A detailed study of the plate tectonic process believed to underlie the creation of the individual continental masses. The volcanic and volcanic processes responsible for the creation of new land masses and radical changes in the old land masses. The environmental factors of wind, water, ice, etc. responsible for slow consistent changes in the landscape. *Prereq.* ESC 4103 preferred.

ESC 4205 Historical Geology (3 q.h.)

A comprehensive study of the rock and paleologic fossil evidence available for establishing the evolution of the Earth from Pre-Cambrian time to the present. Special attention is paid to rock sequences and the evolutionary development of living forms as a basis for understanding the history of the Earth's existence. *Prereq.* ESC 4103 preferred.

ESC 4206 Descriptive Mineralogy (3 q.h.)

A study of the physical, chemical, and crystallographic factors involved in the creation of the mineral substances ranging from the pure metallic ore forms to the extremely complex varieties that characterize most of the common rock forms as well as a few of the rarer varieties. *Prereq.* ESC 4204 preferred.

ESC 4207 Hard Rock Petrology (3 q.h.)

An examination of the numerous rock forms generated by the volcanic and volcanic activities of the Earth. Consideration of the physical and chemical interactions responsible for the production of the complexity of many of these rock types. *Prereq.* ESC 4204 preferred.

ESC 4208 Soft Rock Petrology (3 q.h.)

Consideration of the physical and chemical processes that are responsible for the vast assortment of consolidated and unconsolidated rock forms generated by the varied assortment of erosion phenomena acting upon the solid Earth. *Prereq.* ESC 4205 preferred.

ESC 4210 Physical Oceanography (formerly ESC 4215) (3 q.h.)

Origin of the global ocean, the physical and chemical properties of sea water, the develop-

ment of ocean currents and their effects on land masses of the world, and the problems of ocean pollution. *Prereq. ESC 4104.*

ESC 4211 Biological Oceanography (formerly ESC 4216) (3 q.h.)

Study of habitat zones and organisms of the sea and the economic importance of renewable marine resources for an expanding world population. *ESC 4210 recommended.*

ESC 4212 Geological Oceanography (formerly ESC 4217) (3 q.h.)

Topics include physiography and structure of ocean basins; marine geological processes and features; sedimentation, erosion, shorelines, and the topography of the ocean floor; and methods and techniques of marine geological exploration. *ESC 4211 recommended.*

ESC 4213 Marine Resources (formerly ESC 4332) (3 q.h.)

Quantitative and qualitative considerations of energy from the marine environment and current technological developments in the use of tidal power, off-shore oil, natural gas, and thermal and nuclear energy from the sea.

Topics include food resources of the sea, including analysis of world marine food production and technology, conservation, and mariculture, and shore erosion and coastal zone recreation resources. *Prereq. ESC 4104.*

ESC 4233 Atmosphere, Circulation, Air Masses and Fronts (3 q.h.)

A detailed study of the tropospheric layer of the atmosphere and its relational behavior with respect to a rotating Earth. Concern is for the consequential development of the major latitudinal divisions of the atmosphere, the generation of isolated air masses and the frontal zones developing at regions of interaction. *Prereq. ESC 4104 preferred.*

ESC 4234 Storms and Weather Phenomena (3 q.h.)

A detailed examination of the physical and chemical consequences of interacting air masses. Topics include storm types, precipitation, and the associated weather phenomena such as lightning and wind intensities. *Prereq. ESC 4104 preferred.*

ESC 4235 Weather Data, Maps and Forecasts (3 q.h.)

A study of the various instruments and instrumental techniques by which the meteorologist gathers data. Examine how this data generates weather maps, and how data, maps and computers assist in forecasting the weather. *Prereq. ESC 4104 preferred.*

ESC 4239 Observational Astronomy (formerly ESC 4159) (3 q.h.)

Introduction to the planets, stars, and constellations visible to the naked eye through lectures, visits to the planetarium, and actual viewing sessions. Emphasizes stars and constellations easily seen from mid-northern latitudes. *Prereq. ESC 4105.*

ESC 4240 Historical Astronomy (formerly ESC 4248) (3 q.h.)

Study of the numerous efforts to comprehend the nature of the universe through naked eye observations and simple instrumental techniques. *ESC 4239 recommended.*

ESC 4241 Archaeo-Astronomy (formerly ESC 4249) (3 q.h.)

Study of the artifacts, sites, and alignment factors recently recognized as evidence that primitive cultures had a very sophisticated understanding of the night sky and its apparent behavior. *ESC 4240 recommended.*

ESC 4242 Solar System Astronomy (formerly ESC 4390) (3 q.h.)

Study of individual components of the solar system. Contemporary results from the space probes are used to reassess our understanding of the origin and development of the solar system. *Prereq. ESC 4105.*

ESC 4243 Celestial Astronomy (formerly ESC 4391) (3 q.h.)

Topics include the sun as a model star; variations of characteristics in single stars, star systems, and stellar populations; the H-R diagram and stellar evolution; and the significance of radio astronomy for stellar structure and stellar evolution. *ESC 4242 recommended.*

ESC 4244 Cosmology (formerly ESC 4392) (3 q.h.)

Topics include structure and organization of the Milky Way galaxy; the nature of interstellar and intergalactic space; quasars, pulsars, and black holes; and cosmology. *ESC 4243 recommended.*

ESC 4250 Conservation and the Nation (formerly ESC 4420) (3 q.h.)

Study of conservation problems and land-use practices in the U.S. Includes an in-depth study of the irrelevance of national boundaries to conservation issues.

ESC 4251 Conservation and the Community (formerly ESC 4421) (3 q.h.)

Study of conservation problems and land-use practices at the local level. Includes an in-depth study of urban development and its impact on the environment. *ESC 4250 recommended.*

ESC 4252 Conservation Management (formerly ESC 4422) (3 q.h.)

Examination of current conservation practices at the local level. Includes the role of relevant agencies, sources of knowledge and assistance, the nature and scope of needed practices, and the feasibility of community action. *ESC 4251 recommended.*

ESC 4680 Science, Technology, and Ancient Societies (formerly ESC 4650) (3 q.h.)

Interdisciplinary course conducted using an independent study/seminar approach. An examination of changes in sciences, technologies, and societal structures from prehistory through classical cultures and the beginning of the Renaissance.

ESC 4681 Science, Technology, and Modern Societies (formerly ESC 4651) (3 q.h.)

Interdisciplinary course conducted using an independent study/seminar approach. An examination of changes in sciences, technologies, and societal structures from the beginning of the Renaissance through the period of industrialization and the present day.

ESC 4682 Science, Technology, and Society (Intensive) (formerly ESC 4652) (6 q.h.)

Same as ESC 4680 and ESC 4681.

ESC 4683 Science, Technology, and Medieval Societies (3 q.h.)

An interdisciplinary course using an independent study/seminar technique. Topics include the sciences, technologies and social structures (especially those of the Near and the Far East) and their interactions with the societies of western civilization between 300 A.D. and the phenomenon of the Italian Renaissance.

ESC 4700 Advanced Tutorial 1 (3 q.h.)

Opportunity to take upper level course independently. See page 16 for details. *Prereq.* 87 q.h.

ESC 4701 Advanced Tutorial 2 (3 q.h.)

See ESC 4700.

ESC 4801 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

FINANCE**FI 4101 Personal Finance** (3 q.h.)

A practical approach to problems involved in managing personal finances. Includes financial planning, budgeting, obtaining credit and

loans, income taxes, savings and investments, life insurance, home buying, and estate planning. Subjects are treated in a nontechnical manner. Recommended for nonfinance majors.

FI 4301 Principles of Finance (Open) (3 q.h.)

The scope and nature of finance, introducing basic financial concepts and principles. Includes financial analysis, financial planning, working capital management, the time value of money, and an introduction to financial markets and different types of securities.

Prereq. ACC 4102 and ECN 4116.

FI 4302 Financial Management (Open) (3 q.h.)

Introduction to financial management from both a domestic and an international perspective. Includes valuation, leverage, financial analysis and planning, working capital management, capital budgeting, cost of capital, and long-term and short-term financing decisions. Spreadsheets used. *Prereq.*

FI 4301 or FI 4401 and MIS 4101.

FI 4330 Management of Financial Institutions (3 q.h.)

Operation of bank and nonbank financial institutions and their role in the economy. Discusses operating objectives, services, asset management, and sources of financing and profitability. *Prereq.* FI 4402 or FI 4302.

FI 4335 Bank Management (3 q.h.)

Financial management of commercial banks and thrift institutions. Problems of liquidity and investment management, loan portfolio and capital management, and various pricing problems in the context of a changing economic and regulatory environment. Lectures, discussions, and case studies. *Prereq.* FI 4402 or FI 4302.

FI 4360 Speculative Markets (3 q.h.)

Studies futures contracts and options contracts, their rapid growth in speculative markets, and the uses of these contracts. All of these new instruments have simultaneously increased the complexities of and opportunities in financial markets. Both individual investors and institutional investors such as portfolio managers, banks, multinational corporations, and mutual funds can now minimize their exposure to movements in stock prices, exchange rates, and interest rates by following active and dynamic portfolio strategies that employ these new instruments. *Prereq.* FI 4411 or instructor's permission.

FI 4383 Personal Financial Planning (3 q.h.)

Development of financial planning expertise useful to those considering careers as personal financial planners. Includes budgeting, insurance, taxes, estate planning, basic investment vehicles and strategies, and related legal aspects. *Prereq.* FI 4301 or FI 4401.

FI 4401 Principles of Finance (Reserved) (3 q.h.)

The scope and nature of finance, introducing basic financial concepts and principles. Includes financial analysis, financial planning, working capital management, the time value of money, and an introduction to financial markets and different types of securities.

Prereq. ACC 4102 and ECN 4116 and 80 q.h.

FI 4402 Financial Management (Reserved) (3 q.h.)

Introduction to financial management from both a domestic and an international perspective. Includes valuation, leverage, financial analysis and planning, working capital management, capital budgeting, cost of capital, and long-term and short-term financing decisions. Spreadsheets used. *Prereq.* FI 4401 or 4301 and MIS 4101 and 80 q.h.

FI 4403 Financial Strategy (Reserved) (3 q.h.)

Financial management using the case-method approach. Includes advanced capital budgeting, capital structure, decision-making, dividend policy, leasing, convertibles and warrants, mergers, failures and reorganization, and the timing of financial policy. *Prereq.* FI 4402 or FI 4302 and 80 q.h.

FI 4410 Investment Principles (Reserved)* (3 q.h.)

Investment concepts, practices, and procedures. Reviews various types of investments, including the role of security markets and security analysis. *Prereq.* FI 4401 or FI 4301 and 80 q.h.

FI 4411 Investment Management (Reserved) (3 q.h.)

Relationship between the economy and stock prices. Covers corporate analysis, earnings, dividends, and cash flow and introduces portfolio analysis. Studies technical analysis versus fundamental factors. *Prereq.* FI 4410 or FI 4310 and 80 q.h.

FI 4420 Credit Principles (Reserved)* (3 q.h.)

Introduction to credit and its functions. Examines the role of the credit executive, credit investigation, documentary credit, trade credit, and organization of the credit department. *Prereq.* FI 4401 or FI 4301 and 80 q.h.

FI 4421 Credit Management (Reserved) (3 q.h.)

Forms of credit and collection services, including analysis of financial statements, determination of credit-worthiness, creditors'

rights, adjustment bureau operations, credit insurance, and guarantees. *Prereq.* FI 4420 or FI 4320 and 80 q.h.

FI 4425 Budgeting and Planning (Reserved)* (3 q.h.)

Managerial planning, budgetary control, and financial analysis. Studies the interrelation between functional areas in an organization using consolidated profit planning as an integrating device. Covers fundamental financial analysis, comprehensive profit planning, general expense planning, production planning, materials planning, purchasing.

Prereq. FI 4401 or FI 4301 and 80 q.h.

FI 4426 Financial Control (Reserved) (3 q.h.)

Development and application of variable budgets, planning and control of capital expenditures, computer applications in profit planning, cash flow planning and control, cost-profit-volume analysis, performance reporting, and analysis of budget variations.

Prereq. FI 4425 or FI 4325 and 80 q.h.

FI 4450 International Finance (Reserved) (3 q.h.)

Introduction to international financial management in the multinational corporation. Analyzes basic problems and finance considerations involved with international investments, trade, and payments. Also covers planning in the international environment related to exchange rates, financial strategy, sources of capital, working capital management, fund flows, and management control through accounting and financial reporting. *Prereq.* FI 4402 or FI 4302 and 80 q.h.

FI 4600 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 q.p.a.

FI 4601 Honors Program 2 (4 q.h.)

See FI 4600.

FI 4602 Honors Program 3 (4 q.h.)

See FI 4600.

FI 4701 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

FI 4702 Independent Study 2 (3 q.h.)

See FI 4701.

FI 4703 Independent Study 3 (3 q.h.)

See FI 4701.

FI 4800 Advanced Tutorial 1 (3 q.h.)

Opportunity to take upper level course independently. See page 16 for details. *Prereq.* 87 q.h.

FI 4801 Advanced Tutorial 2 (3 q.h.)

See FI 4800.

FI 4900 Field Work (6 q.h.)

Opportunity to enhance career development by applying academic background to practical problems in the workplace. See page 16 for details. *Prereq.* *Approval of Program Director.*

HEALTH MANAGEMENT**HMG 4100 Hospital Organization and Management 1** (3 q.h.)

Study of hospital organizational structure and administration. Focuses on the complex nature of health administration, its interdependent relationships and organizational strategy.

HMG 4101 Hospital Organization and Management 2 (3 q.h.)

Continuation of HMG 4100, emphasizing organizational issues and management techniques. *Prereq.* *HMG 4100.*

HMG 4103 Hospital Organization and Management (Intensive) (6 q.h.)

Same as HMG 4100 and HMG 4101.

HMG 4200 Health Science Statistics (3 q.h.)

Designed to give health practitioners the opportunity to learn to apply basic statistical techniques in the gathering, display, and interpretation of health data. Discusses principles of research design and agencies involved in collecting statistical data. *Prereq.* *MTH 4111.*

HMG 4210 Medical Care and Current Social Problems 1 (3 q.h.)

Presentation of some of the complex dilemmas faced in medical ethics today through lectures, seminars, and case studies. Includes the escalating cost of health care versus the ability to pay; teenage pregnancy; abortion; genetic counseling and screening; behavior control; alcoholism; and the "right to health care."

HMG 4211 Medical Care and Current Social Problems 2 (3 q.h.)

Introduction to such problem areas as child abuse; suicide; euthanasia; the withholding of treatment; the concept and exercise of informed, voluntary consent; patients' rights; the living will; human experimentation; and the allocation of scarce medical resources. *Prereq.* *HMG 4210.*

HMG 4215 Health Law (3 q.h.)

Basic hospital legal issues relating to corporate and individual liability. Includes an analysis of consent and competency in health care, emphasizing bioethical questions raised by the removal of life-support systems.

HMG 4300 Home Health Care (3 q.h.)

Programs and techniques for providing effective community home health care and the impact of these programs on the health care delivery system.

HMG 4301 Health Care Delivery Systems (3 q.h.)

The structure, function, and organization of health care services.

HMG 4310 Principles and Practices of Community Health 1 (3 q.h.)

Community health care activities. Emphasizes community health promotion and the coordination and integration of medical and self-care activities with the needs, goals, and resources of the community.

HMG 4311 Principles and Practices of Community Health 2 (3 q.h.)

Continuation of HMG 4310. Emphasizes specific community health problems. *Prereq.* *HMG 4310.*

HMG 4325 Health Planning and Regulation (3 q.h.)

Analysis of past and present interventions that affect the supply and demand side of the health care system at the community, state, regional, and national levels. Planning and regulations are discussed in the context of political considerations influencing their implementation and effectiveness.

HMG 4390 The Patient's Impact on Decision-Making (3 q.h.)

Explores some of the personal dimensions of illness and treatment and the nature of the relationships between ill people and those trying to care for them. Emphasis on how this interaction effects and influences health management decisions.

HMG 4400 Health Care Financial Management 1 (3 q.h.)

Introduction to health care financial management, including issues in fund accounting, control, and reimbursement. *Prereq.* *FI 4101.*

HMG 4401 Health Care Financial Management 2 (3 q.h.)

Continuation of HMG 4400. *Prereq.* *HMG 4400.*

HMG 4429 Health Care Delivery's Changing Environment (2 q.h.)

Health care delivery systems are experiencing a multitude of changes. Keeping up with the changes and anticipating future changes are the subjects covered in a series of five seminars. Topics include quality health care in the '80s, financing health care, alternative health care delivery systems, computers and health care, and future trends.

HMG 4440 Health Care Operations Management (3 q.h.)

An applications-oriented case course focusing on selected operations management planning, restructuring, and control problems common to hospitals and other health service organizations.

HMG 4445 Health Care Marketing and Communication (3 q.h.)

The “how” and “why” of marketing in health care. Presents basic principles, including formulating a marketing plan, strategic marketing practices, and specific marketing for specialized organizations such as HMOs and mental health nursing homes. *Prereq.* MKT 4301.

HMG 4550 Contemporary and Controversial Health Care Issues 1 (3 q.h.)

Study of current health care problems. Emphasizes the interrelationships between the economic, social, political, and environmental factors involved in the development and delivery of health care.

HMG 4551 Contemporary and Controversial Health Care Issues 2 (3 q.h.)

Continuation of HMG 4550. *Prereq.* HMG 4550.

HMG 4580 Information Processing in Health Care (3 q.h.)

Introduction to computer applications and management in health care facilities, including the evolution and application of computer use in health, clinical, and business information systems; patient care; management; public health; and reimbursement. The information flow of clinical and nonclinical patient data is applied to the principles of information system life-cycle development. The role of the health manager in selecting, implementing, and evaluating information systems for health care facilities is considered.

HMG 4600 Long-Term Care Administration 1* (6 q.h.)

Organization of care for the long-term and chronically ill patient. Examines the goals, purposes, and design of long-term care facilities as well as budgeting, financing, capital funding, and administration. *Prereq.* HMG 4101.

HMG 4601 Long-Term Care Administration 2* (6 q.h.)

Study of internal and external systems pertinent to the long-term care facility. Examines such topics as the nursing unit, the role of the physician, therapies, licensing agencies, hospitals, and methods for improving services. *Prereq.* HMG 4600 or equiv. or permission of Director of Health Professions.

HMG 4602 Long-Term Care Administration 3* (6 q.h.)

Examination of long-term care institutions and their impact on the health care industry. Considers the nature and problems of aging and the care of the elderly in the home, in the community, and in institutions. A general survey and summary of the Massachusetts Nursing Home Administrators Licensure Examination is included. *Prereq.* HMG 4601 or equiv. or permission of Director of Health Professions.

HMG 4610 Principles and Practices of Community Mental Health (3 q.h.)

Introduction to the principles of community mental health, emphasizing the development, implementation, operation, delivery, and use of community mental health services.

HMG 4620 Senior Seminar in Health Care Management (1 q.h.)

A review of current health care management topics, expanding on topics covered in HMG 4429. *Must be taken concurrently with HMG 4429.*

HMG 4650 Health Management Practicum 1 (6 q.h.)

Working in conjunction with a preceptor, the student performs independent work within an administrative setting. Projects include problem identification, data gathering, analysis of alternatives, and implementation of a plan of action. *Students must have completed 75 percent of the degree requirements before registering for this course. Applications for registering must be submitted two full quarters prior to the desired starting date.*

HMG 4651 Health Management Practicum 2 (6 q.h.)

A continuation of HMG 4650.

HMG 4700 Advanced Tutorial 1 (3 q.h.)

Opportunity to take upper level course independently. See page 16 for details. *Prereq.* 87 q.h.

HMG 4701 Advanced Tutorial 2 (3 q.h.)

See HMG 4700.

HEALTH RECORD ADMINISTRATION

HRA 4302 Medical Terminology Survey (3 q.h.)

Introduction to the medical terminology of a variety of medical disciplines. *Not open to health record students.*

HRA 4305 Language of Medicine 1 (2 q.h.)

Analysis and definition of medical terms, including anatomical, diagnostic, operative, symptomatic, and pathological terms. *Prereq.* courses in anatomy and physiology.

*Offered even numbered academic years only.

HRA 4306 Language of Medicine 2 (2 q.h.)

Continuation of HRA 4305. *Prereq.* HRA 4305.

HRA 4308 Hospital Management for Health Record Administrators (3 q.h.)

Introduction to health care facility management principles. Examines the interaction of the board of trustees, administration, staff, and interdisciplinary departments within a facility as well as licensing and accrediting agencies that set the standards and policies for health care facilities.

HRA 4310 Health Record Science 1 (6 q.h.)

Introduction to health records, covering health record history, numbering, filing, security, and the health record administrator's relationship to the health care facility. Stresses quantitative and qualitative analysis of the record; includes laboratory experience. *Prereq.* 80 q.h., including BIO 4177 and HRA 4306.

HRA 4311 Health Record Science 2 (6 q.h.)

Methods of record retention, security, and preservation; laws related to patient care and health records; classification theory; basic disease coding; and word processing and transcription. *Prereq.* HRA 4310.

HRA 4312 Health Record Science 3 (6 q.h.)

Basic principles of compiling statistics for hospital and health facilities. Includes preparation of reports, vital statistics reporting, classification theory, principles of disease coding, and special indices. *Prereq.* HRA 4311.

HRA 4313 Health Record Science 4 (6 q.h.)

Topics include health care legislation, quality assurance, utilization review, PSROs, and planning agencies and their impact on record management. Introduction to specialized record systems. *Prereq.* HRA 4312.

HRA 4314 Health Record Science 5 (6 q.h.)

Continued study of specialized record systems. Includes ambulatory care, home care, and long-term care, approached in terms of information management and quality assurance. Discusses problems presented by changing patterns in health care delivery and reviews current literature. *Prereq.* HRA 4313.

HRA 4320 Organization of the Health Record Department 1 (3 q.h.)

The health record department and its organization, lines of responsibility and authority, and personnel roles and functions. Stresses management principles and practices.

Prereq. HRA 4308, HRA 4312, and HRA 4324, or Clinical Coordinator's permission.

HRA 4321 Organization of the Health Record Department 2 (3 q.h.)

Study of health record department office management problems and their solutions, including quality control, time standards, budgeting, office manuals, and work simplification systems. *Prereq.* HRA 4320.

HRA 4322 Organization of the Health Record Department 3 (3 q.h.)

Advanced management studies designed to address practical applications in health record management. *Prereq.* HRA 4321.

HRA 4330 Health Record Computer Science (3 q.h.)

Electronic data processing in the health record and hospital environment. Assesses state-of-the-art information systems and their future in health record management. *Prereq.* MIS 4101 and HRA 4314.

HRA 4332 Topics in Health Records (3 q.h.)

Current issues in health record administration, focusing on inservice, personnel management, health care finance, and computer applications and trends.

HRA 4335 Clinical Practicum 1 (formerly Applied Health Record Science 1) (3 q.h.)

Clinical practicum in health record science in the general hospital. *Prereq.* HRA 4312.

HRA 4336 Clinical Practicum 2 (formerly Applied Health Record Science 2) (3 q.h.)

Clinical practicum in health record science in specialized health settings. *Prereq.* HRA 4324.

HRA 4337 Clinical Practicum 3 (formerly Applied Health Record Science 3) (3 q.h.)

Clinical practicum in health record management in the health care facility. *Prereq.* HRA 4325.

HRA 4700 Advanced Tutorial 1 (3 q.h.)

Opportunity to take upper level course independently. See page 16 for details. *Prereq.* 87 q.h.

HRA 4701 Advanced Tutorial 2 (3 q.h.)

See HRA 4700.

HUMAN RESOURCES MANAGEMENT**HRM 4301 Organizational Behavior (Open)** (3 q.h.)

Fundamentals of organizational life, emphasizing the structure and discipline of groups typically found in a business setting. Issues and data related to leadership styles, employee motivation, and organizational dynamics. Requires significant student participation.

HRM 4302 Introduction to Human Resources Management (Open) (3 q.h.)

Introduction to the rights and responsibilities of employer organizations, individual employees, and employee organizations and how they influence personnel and labor relations activities within an organization. *Prereq.* HRM 4301 or HRM 4401.

HRM 4303 Applied Human Resources Management (Open) (3 q.h.)

Goals and structures of various employer and employee organizations are examined and evaluated in terms of effective human resources management. How the collective bargaining process changes in anticipation of future labor-management relations. *Prereq.* HRM 4302 or HRM 4402.

HRM 4304 Organizational Behavior and Introduction to Human Resources Management (Intensive) (Open) (6 q.h.)

Same as HRM 4301 and HRM 4302.

HRM 4310 Personnel Management 1 (3 q.h.)

Study of the role of the human resources manager, the role of the personnel department in personnel planning and selection, and employment development and evaluation programs. Significant student participation required.

HRM 4311 Personnel Management 2 (3 q.h.)

Continued examination of human resources management. Includes labor-management relations, compensation programs, safety, and affirmative action functions. Case-study analyses require student participation. *Prereq.* HRM 4310.

HRM 4313 Personnel Management (Intensive) (6 q.h.)

Same as HRM 4310 and HRM 4311.

HRM 4320 Techniques of Employee Selection (3 q.h.)

Recruitment, selection, and placement techniques, including interviewing and employment testing.

HRM 4321 Wage and Salary Administration (3 q.h.)

Wage and salary determination, including merit and incentive plans, wage and salary structure, compensation methods, and the impact of employer-employee relations on compensation systems.

HRM 4322 Employee Benefits (3 q.h.)

Study of private and public programs related to job and worker income security. Includes unemployment compensation, training and employment services, private guaranteed income, retirement pension plans, and disability and group insurance.

HRM 4323 Job Evaluation (3 q.h.)

Wage-payment systems, wage determination,

job elements, rating scales, the writing of job descriptions and specifications, selection of plans, development of wage structures, and principles of merit rating.

HRM 4324 Creative Problem-Solving (3 q.h.)

Opportunity to learn and practice new ways of thinking. Discusses ways to sense and analyze problems, develop ideas, and evaluate and implement solutions, and examines the attitudes and climates conducive to creative thinking. Also provides methods for developing imagination, the key part of the creative process.

HRM 4325 Training and Development in Organizations (3 q.h.)

Explores the basics of training in a variety of settings in organizations. Special emphasis is placed on training and development as a human resource function by providing an overview of the principles of adult learning, needs assessment, goal setting, and design and evaluation.

HRM 4330 Employment Rights 1 (3 q.h.)

Topics include minimum wage, hours of work, overtime, and other pertinent rules and regulations, and child labor laws. Study of laws dealing with health, safety, disability, and compensation for work-related injuries, such as OSHA, ERISA. *Prereq.* HRM 4303.

HRM 4332 Employment Rights 2 (3 q.h.)

Examination of the old Civil Rights Laws (Sections 1981, 1983, 1985 [3], 1988); Title VI, VII, and IX of the Civil Rights Act of 1964; Age Discrimination in Employment Act; Equal Pay Act; Sections 503 and 504 of the Rehabilitation Act of 1973; Equal Opportunity Act 11246; Affirmative Action and related areas; and current rulings and court decisions regarding discrimination on the basis of race, sex, religion, national origin, age, and disability. *Prereq.* HRM 4303.

HRM 4340 Public and Private Sector Collective Bargaining in the United States (formerly HRM 4341, Private Sector Collective Bargaining in the United States) (3 q.h.)

Comparison of critical issues and problems affecting collective bargaining between unions and national, state, and local governments; and between unions and the private domestic sector of the economy. Student participation required. *Prereq.* HRM 4303.

HRM 4345 Comparative International Labor Relations Systems (3 q.h.)

Comparison and contrast of selected international labor relations systems with that of the United States, including recent developments

such as worker participation and co-determination. Research and preparation of position paper by the student; class discussion. *Prereq.* HRM 4303.

HRM 4346 Negotiations in Labor Management (3 q.h.) Negotiation skills, the use of mediation and fact-finding in collective bargaining agreements, the interpretation and application of such agreements, and the use of arbitration. Student participation in simulated negotiation and grievance procedures. *Prereq.* HRM 4303.

HRM 4401 Organizational Behavior (Reserved) (3 q.h.) Fundamentals of organizational life, emphasizing the structure and discipline of groups typically found in a business setting. Issues and data related to leadership styles, employee motivation, and organizational dynamics. Requires significant student participation. *Prereq.* 80 q.h.

HRM 4402 Introduction to Human Resources Management (Reserved) (3 q.h.) Introduction to the rights and responsibilities of employer organizations, individual employees, and employee organizations and how they influence personnel and labor relations activities within an organization. *Prereq.* HRM 4401 or HRM 4301 and 80 q.h.

HRM 4403 Applied Human Resources Management (Reserved) (3 q.h.) Goals and structures of various employer and employee organizations are examined and evaluated in terms of effective human resources management. How the collective bargaining process changes in anticipation of future labor-management relations. *Prereq.* HRM 4402 or HRM 4302 and 80 q.h.

HRM 4404 Organizational Behavior and Introduction to Human Resources Management (Intensive) (Reserved) (6 q.h.) Same as HRM 4401 and HRM 4402. *Prereq.* 80 q.h.

HRM 4600 Honors Program 1 (4 q.h.) Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 q.p.q.

HRM 4601 Honors Program 2 (4 q.h.) See HRM 4600.

HRM 4602 Honors Program 3 (4 q.h.) See HRM 4600.

HRM 4701 Independent Study 1 (3 q.h.) Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

HRM 4702 Independent Study 2 (3 q.h.) See HRM 4701.

HRM 4703 Independent Study 3 (3 q.h.) See HRM 4701.

HRM 4800 Advanced Tutorial 1 (3 q.h.) Opportunity to take upper level course independently. See page 16 for details. *Prereq.* 87 q.h.

HRM 4801 Advanced Tutorial 2 (3 q.h.) See HRM 4800.

HRM 4900 Fieldwork (6 q.h.) Opportunity to enhance career development by applying academic background to practical problems in the workplace. See page 16 for details. *Prereq.* Approval of Program Director.

HEALTH SCIENCE

HSC 4210 Basic Nutrition (3 q.h.) Introduction to nutrition and foods. Focuses on current scientific knowledge of nutrition and how this knowledge can guide an individual toward making appropriate food choices.

HSC 4220 Basic Pharmacology (3 q.h.) Introduction to the major classes of drugs. Presents the mode of action, common side effects, dosage, pharmaceutical forms, rate and route of administration, and known interactions and toxicities of the most commonly used drugs. *Prereq.* BIO 4177, CHM 4113, or equiv., or instructor's permission.

HSC 4301 Mechanisms of Disease 1 (3 q.h.) The pathophysiology of major diseases. Discusses diagnosis and treatment, emphasizing inflammation, immunology, infectious disease oncology, endocrine disorders, and trauma. *Prereq.* BIO 4177 or equiv.

HSC 4302 Mechanisms of Disease 2 (3 q.h.) Continuation of HSC 4301, using an organ-system approach to disease. Emphasizes cardiovascular, gastro-intestinal, pulmonary, and musculoskeletal diseases. *Prereq.* HSC 4301.

HSC 4310 Public Health 1 (3 q.h.) Study of principles of public health and current mental and physical health problems. Includes communicable diseases, mental health, maternal and child health, alcoholism, and chronic diseases. Also examines federal, state, and community resources mobilized to aid in prevention, identification, treatment, and rehabilitation.

HSC 4311 Public Health 2 (3 q.h.) Continuation of HSC 4310. Includes environmental health; official, voluntary, and

international health organizations; preventive medicine; and public health education.

HSC 4315 Environmental Problems and Health (3 q.h.)
Environmental conditions on land and in the air and water, including the causes of pollution, its effects on human and other life, and a general discussion of current control methods. Emphasizes the significance of environmental problems for the individual.

HSC 4320 Training and Development in the Health Professions 1 (3 q.h.)

Educational program design for the practitioner, including program planning, teaching strategies, and the development and evaluation of educational objectives.

HSC 4321 Training and Development in the Health Professions 2 (3 q.h.)

Continuation of HSC 4320. Emphasizes program implementation and evaluation and student motivation. *Prereq.* HSC 4320.

HSC 4600 Advanced Nutrition (3 q.h.)

Study of food chemistry, nutrition, and physiology as applied to diet. Includes recent developments in normal nutrition and a critical review of the literature and experimental data on which principles of human nutrition are based. *Prereq.* HSC 4210.

HSC 4601 Advanced Pharmacology (3 q.h.)

Prereq. HSC 4220 or equiv.

HSC 4602 Methods and Materials in Public Health Education (3 q.h.)

Introduction to public health education.

Prereq. HSC 4311 or instructor's permission.

HSC 4610 Geriatric Nutrition (3 q.h.)

Integration of basic nutrition principles with the most current information on the aging process. Reviews state, local, and federal nutrition programs in terms of services, eligibility, and effect upon the elderly. *Prereq.* knowledge of basic nutrition or instructor's permission.

HSC 5610 Geriatric Nutrition (3 CEUs)

Same as HSC 4610.

HSC 4613 Oral Microbiology (3 q.h.)

Study of microbiota inhabiting the ecologic niches of the oral cavity. Examines factors that contribute to the role of bacteria in oral pathology, particularly caries and periodontal disease, and the relationship of bacteria and therapy. *Prereq.* BIO 4190.

HSC 4614 Advanced Periodontology 1 (3 q.h.)

Diagnosis, treatment, and control of periodontal diseases, starting with a review of the

structure and purposes of the periodontal tissues. Emphasizes the role of the dental hygienist in recognizing and treating disease, motivating and instructing the patient, and carrying out periodontal maintenance therapy. Includes mucogingival problems, furcation involvements, acute gingival infections, root planing, and gingival curettage. Students prepare a paper on a topic of special interest.

Prereq. Dental Hygiene Certificate.

HSC 4615 Advanced Periodontology 2 (3 q.h.)

Latest advances and theories in periodontology. Includes the role of bacteria in pathology, immunopathology, and therapeutic alternatives. Class participation is stressed.

Prereq. Dental Hygiene Certificate or instructor's permission.

HSC 4700 Advanced Tutorial 1 (3 q.h.)

Opportunity to take upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.

HSC 4701 Advanced Tutorial 2 (3 q.h.)

See HSC 4700.

HSC 4801 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

HSC 4802 Independent Study 2 (3 q.h.)

See HSC 4801.

HSC 4803 Independent Study 3 (3 q.h.)

See HSC 4801.

HISTORY

HST 4101 The Civilization of the Ancient and Medieval Worlds

(formerly History of Civilization 1) (3 q.h.)

Development of human institutions up to the end of the Middle Ages. Emphasizes the continuities and changes that occur within civilizations and the similarities, differences, and relationships that exist among contemporary civilizations around the world. Explores implications of each historical period for our lives today.

HST 4102 The Civilization of the Early Modern World
(formerly History of Civilization 2) (3 q.h.)

The period from the end of the Middle Ages to the French Revolution in 1789. Emphasizes the intellectual, technological, and political expansion of Europe and the reactions of the rest of the world to it. Special attention is

given to such topics as the rise of dynastic states, the rise and fall of mercantilism, the scientific revolution, exploration and gunpowder technology, and order and revolution.

HST 4103 The Civilization of the Modern World

(formerly History of Civilization 3) (3 q.h.)

The world from 1789 to the present. Includes capitalism, industrialization, nationalism, imperialism, the clash of ideologies in the nineteenth century, and a study of total war in the present century. Based on this historical study, explores prospects for the future.

HST 4110 History of Civilization A (4 q.h.)

Major ideas and institutions of civilizations from ancient times to 1648. *For Alternative Freshmen-Year Students only. Not open to students who have taken HST 4101 or HST 4102.*

HST 4111 History of Civilization B (4 q.h.)

Continuation of HST 4110, covering the period since 1648. *For Alternative Freshmen-Year Students only. Not open to students who have taken HST 4102 or HST 4103.*

HST 4201 American History 1763-1848

(formerly American History 1) (3 q.h.)

America from 1763 to 1848, with attention to the development of political, economic, and social institutions in the new republic.

HST 4202 American History 1848-1917

(formerly American History 2) (3 q.h.)

The United States from 1848 to 1917, with attention to the Civil War, economic development thereafter, and the Progressive Era.

HST 4203 American History Since 1917 (formerly American History 3) (3 q.h.)

The United States since 1917, an age of urbanized industrialism and international involvement and crisis.

HST 4241 The Historian's Craft (3 q.h.)

Discussion of ways in which the historian studies the past, with emphasis on research and writing.

HST 4263 Oral History (3 q.h.)

Learning history from those who lived it. Students conduct tape-recorded interviews of first-hand experiences in a selected area of twentieth-century history. Students need access to an audiotope recorder.

HST 4265 Introduction to Public History (3 q.h.)

Topics include the new discipline of public historical archiving, the construction of historical displays and exhibits, the preservation and restoration of historic sites and structures, the editing of historical documents and

journals, the operation of historical societies, and the production of historical media programs.

HST 4301 Technological Transformation of Society (3 q.h.)

The relation between technological innovations and the world in which they take place. Discusses conditions necessary for discovery and innovation and the impact of technology on the political, economic, and social environment. (Thematic Group D)

HST 4302 History of Flight and Space (3 q.h.)

Beginning with the ancient Greeks' and Leonardo da Vinci's dreams of flight, the course traces the history of nonpowered flight from the balloon experiments of the Montgolfier brothers to contemporary hang-gliders; of powered flight from the Wright brothers through supersonic transport; and of rocketry and space travel from their beginnings through the *Enterprise*. (Thematic Group D)

HST 4303 History of the Automobile (3 q.h.)

History of the automobile in Europe and America. Includes invention, production, impact on social and economic life, and the problems of pollution and energy. (Thematic Group D)

HST 4304 History of Energy (3 q.h.)

Examination of how human beings have mobilized the forces of nature to survive, to alter and improve their lifestyles, and to dominate their fellow human beings. Emphasizes the transformation from one energy source to the available alternatives and the reasons for the choices made. Includes the change from human power to animal and machine power, the energy crisis of the sixteenth century, the turning from wood to water and coal power, the rising use of electricity and fossil fuels, the birth of the Atomic Age, and the contemporary history of the oil crisis. (Thematic Group D)

HST 4305 Health and Sickness: Historical Perspectives (3 q.h.)

Survey of medical theories from ancient times to the present, emphasizing concepts of disease causation and the health care systems or institutions derived from them. Medical theory and practice are related to both the general history of the period and the particular political, economic, or social circumstances that influenced attitudes regarding health care. (Thematic Group D)

HST 4401 Ancient Middle East (3 q.h.)

Study of ancient cultures and peoples in the Middle East to the rise of Islam.

HST 4403 History of the Jews 1 (3 q.h.)

Cultural and intellectual survey of the Jews from the end of antiquity to early modern times.

HST 4404 History of the Jews 2 (3 q.h.)

Role and position of the Jews in modern history. (Thematic Group A)

HST 4407 Ancient Greece (3 q.h.)

Origin and development of Greek civilization.

HST 4408 Ancient Rome (3 q.h.)

Ancient Roman civilization, emphasizing the rise of the Republic and the decline of the Empire.

HST 4410 The Middle Ages (3 q.h.)

History of Europe from the fall of Rome to 1350.

HST 4412 Islamic History (3 q.h.)

History of the Muslim Arab world from the seventh century to the end of the Abbasid Caliphate in 1258.

HST 4420 Renaissance and Reformation (3 q.h.)

History of Europe from 1350 to 1648, with attention to intellectual, religious, political, and economic developments.

HST 4424 Europe 1870-1921 (3 q.h.)

Background of World War I, including nationalism, militarism, imperialism, and the alliance system, as well as the making of war and peace. (Thematic Group C)

HST 4425 Europe Since 1921 (3 q.h.)

Europe after World War I; World War II; the Cold War; and the efforts to unify the continent. (Thematic Group C)

HST 4434 Family History (3 q.h.)

History of the family in Europe and America from 1600 to the present. Includes the changing nature and role of the family, marriage and divorce, child rearing, and aging. (Thematic Group E)

HST 4435 Women in European History (3 q.h.)

Historical examination of the position and role of women in European life. (Thematic Group E)

HST 4443 European Intellectual History Since 1815 (3 q.h.)

Main currents of European thought from Romanticism to the present and their social and political contexts.

HST 4455 Ireland Since 1800 (3 q.h.)

The Irish question in British politics from the Act of Union to the present. (Thematic Group A)

HST 4460 Hitler's Germany (3 q.h.)

Origins and nature of Hitler's Third Reich, emphasizing the personal lives of Nazi leaders

in an attempt to understand how seemingly ordinary people could enthusiastically promote wars of aggression and revel in genocidal policies. (Thematic Group C)

HST 4466 History of Eastern Europe Since 1500

(3 q.h.)

Topics include Stefan Bathory and papal interest in Orthodox Russia; Western interference in Russia's "Time of Troubles"; Swedish invasions and the Northern War; the decline of Poland through Stanislaw Poniatowski and Czarina Catherine the Great of Russia. Also covers the partitions of Poland and Tadeusz Kosciuszko; Napoleon; revolutionary movements through 1848; Slavic romantic revolutionaries and the *fin de siecle*; World War I and the reconstruction of eastern Europe; Hitler; Stalin; World War II; and the Iron Curtain.

HST 4467 Russia to 1917 (3 q.h.)

Emergence of Russia as a recognized European power; history of the Russian people and government to the revolutions of 1917.

HST 4468 Russia Since 1917 (3 q.h.)

The revolutions of 1917 and the subsequent history of the Russian people and government, with special emphasis on foreign relations. (Thematic Group C)

HST 4469 Russian Expansionism (3 q.h.)

Russia's quest for territory after 1500, with attention to the conquest of neighboring territories, the Sino-Russian disputes, and current issues in Soviet geopolitics. (Thematic Group C)

HST 4501 American Indians (3 q.h.)

Survey of native Americans from pre-Columbian times to the present. (Thematic Group A)

HST 4502 Colonial America (3 q.h.)

Topics include exploration and settlement of North America; the development of political, social, and economic institutions; and the international rivalry to 1763.

HST 4503 The American Revolution (3 q.h.)

British-American relations after 1763; war and peace.

HST 4505 The Making of the American Constitution (3 q.h.)

Beginning with the weaknesses of the Articles of Confederation, this course examines the movement for a stronger national government, the drafting of the Constitution and the first twelve amendments, and their implementation in the early years of the Republic.

HST 4506 American Constitutional History, 1835-1910 (3 q.h.)

American constitutional development in the time of Chief Justice Taney; the constitutional impacts of secession and Civil War; post-Civil War Supreme Court cases involving economic affairs, social problems, and individual rights in the terms of Chief Justices Chase, Waite, and Fuller.

HST 4507 American Constitutional History Since 1910 (3 q.h.)

American constitutional development from the Progressive Era to the present, with attention to amendments to the Constitution, the growth of the national government, and Supreme Court cases involving economic affairs, civil liberties, and civil rights.

HST 4511 Populism and Progressivism (3 q.h.)

Topical history of the United States from 1890 to 1920, concentrating on its reactions to industrialization and urbanization.

HST 4512 The Age of Roosevelt (3 q.h.)

Topical history of the United States in time of world war, prosperity, depression, and war again.

HST 4513 Contemporary America (3 q.h.)

The American people from the close of World War II to the present. (Thematic Group C)

HST 4523 American Diplomatic History (3 q.h.)

Selected topics in the history of American foreign relations and policy since 1789.

HST 4530 American Economic History (3 q.h.)

Selected topics in the development of the capitalist economy in the United States, with attention to the role of government since 1789. (Thematic Group B)

HST 4540 American Social History (3 q.h.)

Selected topics in the life of the American people since 1789. (Thematic Group B or E)

HST 4542 Women in American History (3 q.h.)

Historical examination of the position and role of women in American life. (Thematic Group B or E)

HST 4543 African-American History (3 q.h.)

History of African Americans from colonial times to the present. (Thematic Group A)

HST 4546 Americans at Play: A History of Leisure (3 q.h.)

An examination of 300 years of leisure from the colonial quilting bee to modern professional football, with special attention to class, gender, and ethnicity and attempts to regulate leisure activity. (Thematic Group B)

HST 4547 History of Sport in America (3 q.h.)

History of the major sports and their impact on American life. (Thematic Group B)

HST 4548 American Heroes (3 q.h.)

Comparative exploration of the nature and functions of heroism in American history, using such individuals as George Washington, Jesse James, Amelia Earhart, Martin Luther King, and Bruce Springsteen as specific case studies. (Thematic Group B)

HST 4549 American Inquisitions (3 q.h.)

Study of inquisitions in modern America, concentrating on the suppression of radical movements by both government and private groups. (Thematic Group C)

HST 4550 Boston to 1822 (3 q.h.)

Study of the Town of Boston from its establishment in 1630 to 1822 and the development of political, economic, and social institutions.

HST 4551 Boston Since 1822 (3 q.h.)

Study of the City of Boston, its annexations, and the changes in the ethnic nature of the population.

HST 4602 Contemporary Latin America (3 q.h.)

Social, economic, and political development of the Latin American republics in the twentieth century. (Thematic Group A or C)

HST 4603 The United States, Central America, and the Caribbean (3 q.h.)

Latin American countries nearest the United States and most affected by U.S. policies, particularly Cuba, Mexico, Nicaragua, El Salvador, and Guatemala. Emphasizes the historical background of current issues. (Thematic Group C)

HST 4604 Mexico Since 1848 (3 q.h.)

Political, economic, social, and cultural evolution of Mexico since the Mexican-American War. Other topics and issues include the *Juarez Reforma*, Diaz's dictatorship, the Revolution of 1910, and the on-going Institutional Revolution.

HST 4606 Canadian History (3 q.h.)

The history of Canada from the time of the European settlement to the present, with emphasis on Canadian relations with the U.S. and the background of the Quebec separatist movement.

HST 4611 Africa Since 1885 (3 q.h.)

The European impact on Africa, the rise of African nationalism, and the emergence of independent African states and their relations with other nations. (Thematic Group C)

HST 4622 Modern Middle East (3 q.h.)

The Middle East since 1914, with attention to Zionism, Pan-Arabism, the effects of two world wars, and the postwar settlements. (Thematic Group C)

HST 4632 China Since 1850 (3 q.h.)

A century of China's history, emphasizing the Western impact on Chinese civilization, China's struggle to maintain independence, and the victory of communism in the mid-twentieth century. (Thematic Group A)

HST 4636 Japan Since 1850 (3 q.h.)

Analysis of Japanese domestic developments and foreign relations since the mid-nineteenth century. (Thematic Group A)

HST 4640 Third World Women (3 q.h.)

Role of women in the less developed, Third World areas, with special emphasis on aspects of change, development, and continuity. (Thematic Group E)

HST 4641 Global Women's Movement (3 q.h.)

Examination of the origins, issues, organizations, networks, and resources of the global women's movement. Attention is given to the place of the U.S. women's movement within this global movement, the movement in developing countries, and the role of the United Nation's Conferences on Women in fostering the movement's development. (Thematic Group E)

HST 4644 War and Peace in the Nuclear Age (3 q.h.)

The history of the nuclear age based on a Corporation for Public Broadcasting/Annenberg telecourse. By incorporating a variety of perspectives on the nuclear past—political, historical, philosophical, and scientific—the programs, lectures, and accompanying print materials provide students with a solid foundation of knowledge upon which they can base their views of the nuclear future. (Thematic Group C)

HST 4645 History of the Vietnam Wars (3 q.h.)

History of military conflict in Vietnam, with attention to the rise of the Viet Minh during World War II, the struggle against the French in the first Indochina War, the impact of the Cold War, and the involvement of the United States after 1950 in Laos and Cambodia (now Kampuchea) as well as in Vietnam. Emphasizes the role of communism and nationalism in Indochina and the motives for American intervention. Includes films revealing American reaction to the escalating conflict. (Thematic Group C)

HST 4646 The Heritage of the Vietnam Wars (3 q.h.)

Examines the impact of the American involvement in Vietnam on American foreign and domestic policy as well as on American attitudes toward themselves and toward the world in the period since 1975. Emphasis will be placed on post-war interpretations of that conflict, on its effects on American ideals, on ideas of military preparedness, on the economy, on popular culture, and on the "healing processes" that have marked the last decade. An assessment of the extent to which Vietnam continues to haunt the American people and the extent to which the country has put the experience behind it will be made and an agenda for future action set forth by the class. (Thematic Group C)

HST 4811 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 q.p.a. (Thematic Group F)

HST 4812 Honors Program 2 (4 q.h.)

See HST 4811.

HST 4813 Honors Program 3 (4 q.h.)

See HST 4811.

HST 4815 Advanced Tutorial 1 (3 q.h.)

Opportunity to take an upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.

HST 4816 Advanced Tutorial 2 (3 q.h.)

See HST 4815.

HST 4821 Field Work in History (6 q.h.)

Designed to enhance career development by allowing students to earn credit for the application of their academic backgrounds to practical problems in the work place. See page 16 for details. *Prereq.* HST 4101, 4102, 4103, 4202, 4203, 4241, and Program Director's approval.

HST 4822 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

HST 4823 Independent Study 2 (3 q.h.)

See HST 4822.

HST 4824 Independent Study 3 (3 q.h.)

See HST 4822.

HOTEL AND RESTAURANT MANAGEMENT**HTL 4301 Introduction to Hotel and Restaurant Management** (3 q.h.)

The hospitality industry in today's economy. Emphasis is on industry growth and development, management problems, and principles of hotel and restaurant management.

HTL 4303 Front Office Management (3 q.h.)

Role and functions of the front office as they relate to the operation of the entire hotel. Covers front office structure, registration, payment, reservations, and night audit.

HTL 4304 Hotel and Restaurant Law (3 q.h.)

Introduction to the fundamental laws, rules, and regulations applicable to the hospitality industry. Includes hospitality management policies that minimize the danger of legal liability; innkeeping; restaurant management; alcoholic beverage control; labor laws; and legislation affecting the hospitality industry.

HTL 4305 Food Preparation 1 (3 q.h.)

Introduction to the fundamentals of food preparation and service, with emphasis on food service industry terminology and equipment. Includes menu planning, requisitioning, pricing, and preparation and service. In addition to classroom instruction, students prepare food in a small-quantity laboratory. (Laboratory fee.)

HTL 4306 Food Preparation 2 (3 q.h.)

Continuation of HTL 4305. *Prereq.* HTL 4305. (Laboratory fee.)

HTL 4307 Food Service Engineering and Sanitation (3 q.h.)

Organization of the maintenance and engineering function. Includes the technical information necessary to establish effective preventive programs. Details the fundamentals of sanitation for food service employees and includes practical guidelines for safe food handling. Provides the future hospitality manager with an opportunity for certification in Applied Food Service Sanitation from the National Institute for the Food Service Industry.

HTL 4308 Food and Beverage Cost Control (3 q.h.)

Introduction to management attitudes toward cost controls through analysis of all aspects of the food service operation. Includes classification of food service facilities, cost accounting, purchasing, inventory, production control methods, and the essentials of food and beverage controls. Develops management-mindedness through examination of organizational structures of food service and specific topics, such as menu pricing, break-even analysis, and cost-volume-profit theory. Emphasizes forecasting and achieving a profitable bottom line.

HTL 4309 Managerial Accounting for the Hospitality Industry (3 q.h.)

Financial practices and systems used in the hospitality industry. Analyzes controls, budgeting, financial statements, and specialized industry accounting procedures. *Prereq.* ACC 4102.

HTL 4310 Hospitality Marketing Management (3 q.h.)

The market in which the hospitality industry operates. Students have the opportunity to develop and implement a marketing plan to meet operational goals. *Prereq.* MKT 4301.

HTL 4313 Introduction to Tourism (3 q.h.)

Introduction to the science, art, and business of attracting, transporting, and accommodating visitors and graciously catering to their needs and wants. Includes sociological and psychological aspects, marketing, and the economics of tourism.

HTL 4320 Food Preparation (Intensive) (6 q.h.)

Same as HTL 4305 and HTL 4306.

HTL 4322 Consumer Food Preparation (3 q.h.)

Concepts and skills learned in HTL 4305 and HTL 4306 are applied in a restaurant setting. Preparation of complete menus for a service dining room, including appetizers, soups, salads, entrees, vegetables, and desserts. Stresses costing, menu planning, quantity recipe production, menu terminology, and kitchen organization. Coordinates food production with students in the dining room service course (HTL 4324). Work in classic kitchen stations on a rotating basis. *Prereq.* HTL 4306 or HTL 4320.

HTL 4324 Dining Room Beverage Operation and Preparation (3 q.h.)

Introduction to the operation of a dining room with beverage service. Includes organization, personnel, methods of table service, menu terminology, table arrangement, requirements for supplies and equipment, sales promotion techniques, and revenue control. Students serve meals prepared by students in the food production course (HTL 4322). Also covers wine service and alcoholic beverage preparation and control. *Prereq.* HTL 4301.

HTL 4325 Intensive Chef's Training (6 q.h.)

For the individual who already has a culinary background and wishes to continue to upgrade his or her skills and understanding of the changing role of today's food industry. Examines chef-management relationship and

the preparation of finer cuisine for hotels, restaurants, clubs, catering, and buffet. Practical demonstrations from *hors d'oeuvres*, through fancy desserts. Tableside and wine cookery, ice carving and extensive menu planning.

HTL 4326 The Joy of Catering (6 q.h.)

How to create truly great dinners and buffets. Garnishing, vegetable carving, *hors d'oeuvres*, bartending, and liquor planning. How to cost-out a party and plan staff, equipment, and food quantities.

HTL 4600 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 q.p.a.

HTL 4601 Honors Program 2 (4 q.h.)

See HTL 4600.

HTL 4602 Honors Program 3 (4 q.h.)

See HTL 4600.

HTL 4701 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

HTL 4702 Independent Study 2 (3 q.h.)

See HTL 4701.

HTL 4703 Independent Study 3 (3 q.h.)

See HTL 4701.

HTL 4800 Advanced Tutorial 1 (3 q.h.)

Opportunity to take upper level course independently. See page 16 for details. *Prereq.* 87 q.h.

HTL 4801 Advanced Tutorial 2 (3 q.h.)

See HTL 4800.

HTL 4900 Fieldwork (6 q.h.)

Opportunity to enhance career development by applying academic background to practical problems in the workplace. See page 16 for details. *Prereq.* Approval of Program Director.

INDUSTRIAL MANAGEMENT

IM 4301 Introduction to Operations Management (Open) (3 q.h.)

Concepts and principles related to the management of operation functions, taught from a management point of view. Relationships to other business functions. Operations, as a transformation process, with inputs of materials, investment, and people producing finished goods/services. Topics covered include product and process design, forecasting demand, capacity planning, facilities design, aggregate planning, scheduling, and quality control and assurance. *Prereq.* MS 4325.

IM 4302 Operations Analysis (3 q.h.)

Structuring problems and the application of analytical techniques in the development of solutions to operating systems problems. Topics covered include operations planning and scheduling, analyzing operating performance, quality issues, facilities layout, materials planning, and workforce planning. Examination of the operations audit as it relates to manufacturing and service organizations developed as a tool for operations analysis. *Prereq.* IM 4401 or IM 4301.

IM 4314 Productivity Enhancement and Quality (formerly Production Control and Inventory Management) (3 q.h.)

The fields of quality control and productivity as a body of managerial, technological, behavioral, and economic knowledge, together with the organized application of this knowledge to the practical improvement of operations. Introduction to various productivity improvement programs currently in use, including measurement and control; the relationship between increase in productivity and managing for higher quality. Reviews management practices of modern quality control and the different approaches to optimizing quality. Includes the economics of total quality, internal and external quality, and management of long-term quality and reliability. *Prereq.* MS 4332.

IM 4317 Purchasing and Materials Management (formerly Materials Management) (3 q.h.)

Development and analysis of factors considered in the acquisition process and subsequent management of the materials function. Examines the relationships among price, quality, and delivery performance. Topics covered include the make-or-buy decision, corporate purchasing strategies, setting customer service levels, inventory analysis, facility location, storage and material handling, and selection of the transportation mode. *Prereq.* IM 4401 or IM 4301.

IM 4321 Operations Planning and Control (formerly Management and Operational Control Systems) (3 q.h.)

The nature of control in general and the specific characteristics of management and operations control. Examines control structures, processes, and bases for design and implementation. *Prereq.* IM 4321.

IM 4326 Operations Management Policy (3 q.h.)

Analysis of complex operating situations faced by business managers. Students are exposed to integrative cases and are expected to

identify problems in organizations, to develop viable courses of action, to conduct detailed analyses, and to identify a set of recommendations and an implementation strategy. *Prereq.* IM 4314, IM 4317, IM 4321.

IM 4401 Introduction to Operations Management (Reserved) (formerly Operations Management) (3 q.h.)

Concepts and principles related to the management of operation functions, taught from a management point of view. Relationships to other business functions. Operations, as a transformation process, with inputs of materials, investment, and people producing finished goods/services. Topics covered include product and process design, forecasting demand, capacity planning, facilities design, aggregate planning, scheduling, and quality control and assurance. *Prereq.* MS 4325 and 80 q.h.

IM 4600 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 q.p.a.

IM 4601 Honors Program 2 (4 q.h.)

See IM 4600.

IM 4602 Honors Program 3 (4 q.h.)

See IM 4600.

IM 4701 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

IM 4702 Independent Study 2 (3 q.h.)

See IM 4701.

IM 4703 Independent Study 3 (3 q.h.)

See IM 4701.

IM 4800 Advanced Tutorial 1 (3 q.h.)

Opportunity to take upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.

IM 4801 Advanced Tutorial 2 (3 q.h.)

See IM 4800.

IM 4900 Field Work (6 q.h.)

Opportunity to enhance career development by applying academic background to practical problems in the workplace. See page 16 for details. *Prereq.* Approval of Program Director.

INTERDISCIPLINARY

INT 4110 Self-Assessment and Career Development (3 q.h.)

Understanding the concept of life and career planning and its practical implications for future education and/or work. Students complete a self-assessment, including an evaluation of their competencies and skills, and receive training in career decision making,

with practice in the use of field survey techniques. Overview of job campaigning includes introduction to resume preparation and interviewing techniques.

INT 4200 The Creative Process (3 q.h.)

Thought processes that allow individuals to be creative or original. Through interactive exercises and special projects in composition and problem solving, students can learn how to tap their own creativity. Students are asked to create an original piece of art, music, literature, or research.

INT 4201 Cultural Heritage Seminar (3 q.h.)

Study of the interconnected ways in which art, music, literature, religion, and specific historical events have shaped our culture, values, and self-perceptions. Students undertake projects dealing with one or more themes included in their Cultural Heritage Studies. *Prereq.* 27 q.h. in *Cultural Heritage Studies* (see *Liberal Studies* program, page 16) or instructor's permission.

INT 4202 Contemporary Studies Seminar (3 q.h.)

Analysis and discussion of selected problems of the contemporary world, using analytical tools appropriate to the disciplines contained within the Liberal Studies curriculum. *Prereq.* 27 q.h. in *Contemporary Studies* (see *Liberal Studies* program, page 133) or instructor's permission.

JOURNALISM

JRN 4112 Writing for Media 1 (formerly Fundamentals of Newswriting) (3 q.h.)

Introduction to how to write leads, organize basic news stories, gather facts, and interview. Analyzes news values and the structure of news organizations.

JRN 4113 Writing for Media 2 (formerly Newsgathering and Reporting) (3 q.h.)

Writing of multisource stories, both news and feature; public affairs reporting; advanced interviewing techniques; and legal issues. *Prereq.* JRN 4112 or equiv.

JRN 4114 News Reporting Techniques (3 q.h.)

Introduction to writing in-depth stories requiring significant research and introduction to investigative reporting. Includes libel, privacy invasion, and other legal matters affecting news media. *Prereq.* JRN 4113 or instructor's permission.

JRN 4250 Interpreting the News (3 q.h.)

The impact, both good and bad, of newspapers, television, radio, and other news media on American life. Examines how news is gathered, processed, and disseminated by the various media. "How much do we need the press as a watchdog on government?" and

"Who is watching the watchdog?" are among the questions addressed.

JRN 4300 Photojournalism (3 q.h.)

Introduction to how to use the camera, the negative, and the print in news or feature stories. Includes weekly photo shooting assignments and darkroom work. (Laboratory fee.)

JRN 4335 Public Relations Basics (3 q.h.)

Concepts, components, and methods of public relations, including planning and research, processes of influencing public opinion, and policies concerning corporate and institutional relations with the media and various publics.

JRN 4336 Public Relations Practices (3 q.h.)

Study of specific practices and techniques employed in public relations, especially in relation to the handling of information and organization of activities and events. Also discusses how to define PR "targets" and how to deal with such publics as employees, stockholders, and consumers.

JRN 4337 Public Relations Problems (3 q.h.)

Research and communication techniques used to solve public relations problems and practical experience with individual PR projects, programs, and campaigns.

JRN 4340 Press Power and Critical Issues (3 q.h.)

Study of the impact of news media coverage on major political, economic, and other issues. The increasingly complex relationship between American society and print and broadcast journalism is analyzed.

JRN 4349 Advertising Basics (3 q.h.)

Study of the evolution of advertising, including social, economic, and legal aspects; how advertising agencies and departments function; how advertising fits into the marketing mix; and the basic steps of research.

JRN 4350 Advertising Copywriting (3 q.h.)

Writing effective advertising copy for both print and electronic media; coordinating copy with other creative functions. Elements of good ad copy are analyzed and common pitfalls are reviewed.

JRN 4351 Advertising Practice (3 q.h.)

Study of media planning and selection. Includes defining objectives and determining target audiences; establishing the advertising budget; analyzing the market and the competition.

JRN 4480 Copyediting (3 q.h.)

Practice in the many facets of the editorial process, including editing copy, writing heads, and laying out pages. The course also in-

cludes photo selection, cropping, and outline writing. *Prereq.* JRN 4112.

JRN 4522 Magazine Writing (3 q.h.)

Practice in writing and free-lancing magazine articles. Analysis of magazine markets, preparation of query letters, techniques of research, and submission of manuscript. Travel, how-to, profile, personal experience, and other formats included.

JRN 4540 Writing the Non-Fiction Book (3 q.h.)

This course surveys today's market for the journalistic, non-fiction book and describes methods for selecting a researchable topic, finding the facts, writing the query letter, writing the manuscript, and doing revisions and final draft. By the end of the course, the student submits, among other things, three manuscript chapters.

JRN 4560 Developing Writing Style (3 q.h.)

Developing and refining personal style in journalistic, non-fiction writing. Emphasis is placed on original and effective approaches to features, columns, reviews, editorials, and longer works.

LANGUAGE—ARABIC

LNA 4101 Elementary Arabic 1 (4 q.h.)

Introduction to the Arabic language and culture through speaking, reading, and some writing.

LNA 4102 Elementary Arabic 2 (4 q.h.)

Continuation of LNA 4101 with practice in elementary conversation, reading, and writing. *Prereq.* LNA 4101 or equiv.

LNA 4103 Elementary Arabic 3 (4 q.h.)

Continuation of LNA 4102, building the basic skills necessary to carry on a conversation. *Prereq.* LNA 4102 or equiv.

LANGUAGE—FRENCH

LNF 4101 Elementary French 1 (4 q.h.)

Essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary and idiomatic expressions.

LNF 4102 Elementary French 2 (4 q.h.)

Continuation of grammar study, with oral and written exercises. *Prereq.* LNF 4101 or equiv.

LNF 4103 Elementary French 3 (4 q.h.)

Reading of French prose of increasing difficulty, with written and oral exercises based on the materials read and practice in conversation. *Prereq.* LNF 4102 or equiv.

LNF 4104 Intermediate French 1 (4 q.h.)

Review of grammar, with practice in composition and conversation. *Prereq.* LNF 4103 or equiv.

LNF 4105 Intermediate French 2 (4 q.h.)

History of French civilization, with discussions and conversation. *Prereq.* LNF 4104 or *equiv.*

LNF 4106 Intermediate French 3 (4 q.h.)

Intensive reading of modern French prose, with practice in conversation. *Prereq.* LNF 4105 or *equiv.*

LNF 4815 French Advanced Tutorial 1 (4 q.h.)

Advanced Tutorial Option: When a student is unable to continue study of an upper-level language, or when a language course needed for a degree is not scheduled at appropriate intervals, arrangements can be made for the student to take three advanced tutorials for a total of twelve quarter hours. See page 16 for details. *Prereq.* 87 q.h.

LNF 4816 French Advanced Tutorial 2 (4 q.h.)

See LNF 4815.

LNF 4817 French Advanced Tutorial 3 (4 q.h.)

See LNF 4815.

LANGUAGE—GERMAN**LNG 4101 Elementary German 1 (4 q.h.)**

Essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary and idiomatic expressions.

LNG 4102 Elementary German 2 (4 q.h.)

The more difficult points of grammar, particularly the uses of the subjunctive mood. *Prereq.* LNG 4101 or *equiv.*

LNG 4103 Elementary German 3 (4 q.h.)

Reading of simple German prose, with oral and written exercises based on material read. Conversation in German is encouraged. *Prereq.* LNG 4102 or *equiv.*

LNG 4104 Intermediate German 1 (4 q.h.)

Review of grammar, with practice in composition and conversation. *Prereq.* LNG 4103 or *equiv.*

LNG 4105 Intermediate German 2 (4 q.h.)

History of German civilization, with discussions and conversation. *Prereq.* LNG 4104 or *equiv.*

LNG 4106 Intermediate German 3 (4 q.h.)

Intensive reading of modern German prose, with practice in conversation. *Prereq.* LNG 4105 or *equiv.*

LNG 4815 German Advanced Tutorial 1 (4 q.h.)

Advanced Tutorial Option: When a student is unable to continue study of an upper-level language, or when a language course needed for a degree is not scheduled at appropriate intervals, arrangements can be made for the student to take three advanced tutorials for a

total of twelve quarter hours. See page 16 for details. *Prereq.* 87 q.h.

LNG 4816 German Advanced Tutorial 2 (4 q.h.)

See LNG 4815.

LNG 4817 German Advanced Tutorial 3 (4 q.h.)

See LNG 4815.

LANGUAGE—HEBREW**LNH 4101 Beginning Conversational Hebrew 1 (4 q.h.)**

Acquisition of basic oral skills by introduction of the essentials of Hebrew grammar. Includes extensive practice in pronunciation and acquisition of an idiomatic core vocabulary.

LNH 4102 Beginning Conversational Hebrew 2 (4 q.h.)

Continuation of LNH 4101. Introduces Hebrew prose of moderate difficulty. *Prereq.* LNH 4101 or *equiv.*

LNH 4103 Beginning Conversational Hebrew 3 (4 q.h.)

Continuation of LNH 4102. Continued emphasis on conversation and on building a solid vocabulary. *Prereq.* LNH 4102 or *equiv.*

LANGUAGE—ITALIAN**LNI 4101 Elementary Italian 1 (4 q.h.)**

Essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary and idiomatic expressions.

LNI 4102 Elementary Italian 2 (4 q.h.)

Continuation of grammar study, with oral and written exercises. *Prereq.* LNI 4101 or *equiv.*

LNI 4103 Elementary Italian 3 (4 q.h.)

Reading of Italian prose of increasing difficulty, with written and oral exercises based on the material read. Practice in conversation. *Prereq.* LNI 4102 or *equiv.*

LNI 4104 Intermediate Italian 1 (4 q.h.)

Review of grammar, with practice in composition and conversation. *Prereq.* LNI 4103 or *equiv.*

LNI 4105 Intermediate Italian 2 (4 q.h.)

History of Italian civilization, with discussions and conversation. *Prereq.* LNI 4104 or *equiv.*

LNI 4106 Intermediate Italian 3 (4 q.h.)

Intensive reading of modern Italian prose, with practice in conversation. *Prereq.* LNI 4105 or *equiv.*

LNI 4815 Italian Advanced Tutorial 1 (4 q.h.)

Advanced Tutorial Option: When a student is unable to continue study of an upper-level language, or when a language course needed for a degree is not scheduled at appropriate intervals, arrangements can be made for the student to take three advanced tutorials for a total of twelve quarter hours. See page 16 for details. *Prereq.* 87 q.h.

LNI 4816 Italian Advanced Tutorial 2 (4 q.h.)

See LNI 4815.

LNI 4817 Italian Advanced Tutorial 3 (4 q.h.)

See LNI 4815.

LANGUAGE—JAPANESE**LNJ 4101 Elementary Japanese 1** (4 q.h.)

Basic, practical Japanese, emphasizing the essentials of grammar, pronunciation, progressive acquisition of a core vocabulary, and the use of current, idiomatic expressions.

LNJ 4102 Elementary Japanese 2 (4 q.h.)

Continuation of LNJ 4101. Progressive acquisition of practical skills. *Prereq.* LNJ 4101 or *equiv.*

LNJ 4103 Elementary Japanese 3 (4 q.h.)

Continuation of LNJ 4102. *Prereq.* LNJ 4102.

LNJ 4104 Intermediate Japanese 1 (4 q.h.)

Review of grammar, with practice in composition and conversation. *Prereq.* LNJ 4103 or *equiv.*

LNJ 4105 Intermediate Japanese 2 (4 q.h.)

History of Japanese civilization, with discussions and conversation. *Prereq.* LNJ 4104 or *equiv.*

LNJ 4106 Intermediate Japanese 3 (4 q.h.)

Intensive reading of Japanese prose, with practice in conversation. *Prereq.* LNJ 4105 or *equiv.*

LNJ 4225 The Japanese Mentality (formerly Japanese Culture and Society) (3 q.h.)

By studying various aspects of Japanese cultural history, education, work-ethics, male-female relations, and other areas, students gain insight into the Japanese mentality and how this homogeneous race is surviving in a heterogeneous world.

LNJ 4815 Japanese Advanced Tutorial 1 (4 q.h.)

Advanced Tutorial Option: When a student is unable to continue study of an upper-level language, or when a language course needed for a degree is not scheduled at appropriate intervals, arrangements can be made for the student to take three advanced tutorials for a total of twelve quarter hours. See page 16 for details. *Prereq.* 87 q.h.

LNJ 4816 Japanese Advanced Tutorial 2 (4 q.h.)

See LNJ 4815.

LNJ 4817 Japanese Advanced Tutorial 3 (4 q.h.)

See LNJ 4815.

LANGUAGE—LATIN**LNL 4101 Beginning Latin 1** (4 q.h.)

Study of grammar needed for reading elementary Latin prose as well as for understanding

some basic etymologies. Recommended for those interested in enriching their knowledge of English and Romance languages and those who want to read classical literature in the original.

LNL 4102 Beginning Latin 2 (4 q.h.)

Continuation of LNL 4101. *Prereq.* LNL 4101.

LNL 4103 Beginning Latin 3 (4 q.h.)

Continuation of LNL 4102. *Prereq.* LNL 4102.

LNL 4815 Latin Advanced Tutorial 1 (4 q.h.)

Advanced Tutorial Option: When a student is unable to continue study of an upper-level language, or when a language course needed for a degree is not scheduled at appropriate intervals, arrangements can be made for the student to take three advanced tutorials for a total of twelve quarter hours. See page 16 for details. *Prereq.* 87 q.h.

LNL 4816 Latin Advanced Tutorial 2 (4 q.h.)

See LNL 4815.

LNL 4817 Latin Advanced Tutorial 3 (4 q.h.)

See LNL 4815.

LANGUAGE—SWEDISH**LNN 4101 Beginning Conversational Swedish 1** (4 q.h.)

Acquisition of basic oral skills by introduction of the essentials of Swedish grammar, with extensive practice in pronunciation and acquisition of an idiomatic core vocabulary.

LNN 4102 Beginning Conversational Swedish 2 (4 q.h.)

Continuation of LNN 4101. Introduces Swedish prose of moderate difficulty. *Prereq.* LNN 4101 or *equiv.*

LNN 4103 Beginning Conversational Swedish 3 (4 q.h.)

Continuation of LNN 4102. *Prereq.* LNN 4102 or *equiv.*

LNN 4815 Swedish Advanced Tutorial 1 (4 q.h.)

Advanced Tutorial Option: When a student is unable to continue study of an upper-level language, or when a language course needed for a degree is not scheduled at appropriate intervals, arrangements can be made for the student to take three advanced tutorials for a total of twelve quarter hours. See page 16 for details. *Prereq.* 87 q.h.

LNN 4816 Swedish Advanced Tutorial 2 (4 q.h.)

See LNN 4815.

LNN 4817 Swedish Advanced Tutorial 3 (4 q.h.)

See LNN 4815.

LANGUAGE—RUSSIAN**LNR 4101 Elementary Russian 1** (4 q.h.)

Essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary and idiomatic expressions.

LNR 4102 Elementary Russian 2 (4 q.h.)

Continuation of grammar study, with oral and written exercises. *Prereq.* LNR 4101 or *equiv.*

LNR 4103 Elementary Russian 3 (4 q.h.)

Reading of Russian prose of increasing difficulty, with written and oral exercises based on the material read and practice in conversation. *Prereq.* LNR 4102 or *equiv.*

LNR 4225 Russian Culture and Society (3 q.h.)

Study of various aspects of Russian cultural history, education, work-ethics, male-female relations, and other areas, for insight into the Russian mentality.

LNR 4815 Russian Advanced Tutorial 1 (4 q.h.)

Advanced Tutorial Option: When a student is unable to continue study of an upper-level language, or when a language course needed for a degree is not scheduled at appropriate intervals, arrangements can be made for the student to take three advanced tutorials for a total of twelve quarter hours. See page 16 for details. *Prereq.* 87 q.h.

LNR 4816 Russian Advanced Tutorial 2 (4 q.h.)

See LNR 4815.

LNR 4817 Russian Advanced Tutorial 3 (4 q.h.)

See LNR 4815.

LANGUAGE—SPANISH**LNS 4101 Beginning Conversational Spanish 1** (4 q.h.)

Acquisition of basic oral skills by introduction of the essentials of Spanish grammar. Extensive practice in pronunciation and acquisition of an idiomatic core vocabulary.

LNS 4102 Beginning Conversational Spanish 2 (4 q.h.)

Continuation of LNS 4101. Introduces Spanish prose of moderate difficulty. *Prereq.* LNS 4101 or *equiv.*

LNS 4103 Beginning Conversational Spanish 3 (4 q.h.)

Continuation of LNS 4102. Continued stress on conversation, while building a solid vocabulary. *Prereq.* LNS 4102 or *equiv.*

LNS 4104 Intermediate Spanish 1 (4 q.h.)

Review of grammar, with practice in composition and conversation. *Prereq.* LNS 4103 or *equiv.*

LNS 4105 Intermediate Spanish 2 (4 q.h.)

Examination of Spanish civilization through texts of average difficulty. Intensive reading of modern prose, with occasional oral or written translation and conversation practice based on assigned readings. *Prereq.* LNS 4104 or *equiv.*

LNS 4106 Intermediate Spanish 3 (4 q.h.)

Examination of Spanish-American civilization through texts of average difficulty. Intensive readings of modern prose, with occasional oral or written translations and conversation practice based on assigned readings. *Prereq.* LNS 4105 or *equiv.*

LNS 4815 Spanish Advanced Tutorial 1 (4 q.h.)

Advanced Tutorial Option: When a student is unable to continue study of an upper-level language, or when a language course needed for a degree is not scheduled at appropriate intervals, arrangements can be made for the student to take three advanced tutorials for a total of twelve quarter hours. See page 16 for details. *Prereq.* 87 q.h.

LNS 4816 Spanish Advanced Tutorial 2 (4 q.h.)

See LNS 4815.

LNS 4817 Spanish Advanced Tutorial 3 (4 q.h.)

See LNS 4815.

MANAGEMENT**MGT 4101 Introduction to Business and Management 1** (3 q.h.)

Study of the setting and general structure of American business, including objectives and practices affecting the American standard of living. Examines the characteristics of private enterprise and the nature and challenge of capitalism and other forms of economic enterprise. Introduces types of businesses, the structures of organizations, and the functions of management as well as what a managerial career involves, what problems must be faced, and what decisions must be reached.

MGT 4102 Introduction to Business and Management 2 (3 q.h.)

Methodologies in planning, organizing, directing, and controlling production, marketing, sales, and pricing within the American free enterprise system and in contrast to other business systems. Examines techniques for coping with the intricacies of systems management. *Prereq.* MGT 4101.

MGT 4103 Introduction to Business and Management 3 (3 q.h.)

Basic management concepts and techniques necessary to successful decision making. Emphasizes management as a continuous, active process by introducing methods of designing an organization; understanding and dealing with people; evaluating the political, social, and economic environment; and effectively planning, directing, and controlling an organization. *Prereq.* MGT 4102.

MGT 4105 Introduction to Business and Management (Intensive) (6 q.h.)

Same as MGT 4101 and MGT 4102.

MGT 4108 Women in Business Organizations: Structural and Behavioral Fundamentals (formerly INT 4102) (3 q.h.)

Examine effective management practices and the factors that impede women from acquiring them; the importance of effective communication and dealing with criticism; the validity of common behavioral assumptions, including women's fears of success, inadequate motivation, lack of social access, and disinclination to take charge or withstand pressure. *Prereq.* MGT 4102.

MGT 4109 Women in Business Organizations: Leadership and Communications (formerly INT 4103) (3 q.h.)

Study of dynamics of leadership as they relate to the successful woman manager, including managing conflict, securing control, instituting change, motivating and disciplining others, gaining respect, and distinguishing supervisory from management performance standards. Role playing and case studies assist in the development of leadership and problem-solving capabilities. *Prereq.* MGT 4102.

MGT 4110 Survey of Business and Management (4 q.h.)

Introduction to the setting and general structure of American business, the characteristics of private enterprise, and the nature and challenge of capitalism and other forms of economic enterprise. Covers the forms of business, organizational structure, and functions of management. Through lectures and class discussion, students are given an overview of the methodologies used in planning, organizing, directing, and controlling the functions of production, marketing, sales, pricing, and finance. *For Alternative Freshmen-Year students only.*

MGT 4120 Management of Nonprofit Organizations (3 q.h.)

Nonprofit organizations are found in many areas: medicine, education, human services, arts, religion, and professional associations. This course examines the scope and environment of the nonprofit segment of our economy and investigates characteristics related to governance, membership, organizational structure, financial management, and operational techniques. Special emphasis is placed on business/management needs and professional skills for those interested in or af-

filiated with nonprofit organizations.

MGT 4320 Managing Change (3 q.h.)

Application of managerial concepts and practices to real-world situations with policy or resource constraints. Explores decision making related to the impact of change on the organization and its personnel; develops a conceptual framework for handling change in one's own business career. *Prereq.* MGT 4102.

MGT 4321 Managing for Results (formerly IM 4320, Managing for Results) (3 q.h.)

A forum for the discussion of the wide-ranging management theories of Peter Drucker and other managerial theorists. Covers the concepts and methods available to the results-oriented manager and relationships between theory, practice, and implementing for results. *Prereq.* MGT 4102.

MGT 4323 Management and Leadership (formerly Motivation Management) (3 q.h.)

Designed to help students differentiate between the managerial position as such and a leadership role, evaluating the impact of leadership and management styles on human behavior. Introduces and analyzes important motivation concepts through study of the working environment and the processes that influence both performance and outcome. *Prereq.* MGT 4102.

MGT 4328 Creating New Ventures (3 q.h.)

The nature of entrepreneurship and potential for self-employment by the individual. Includes the sequence from generation of an idea through the design of a plan for owning and operating a small business. *Prereq.* MGT 4102.

MGT 4329 Managing Small Businesses (3 q.h.)

Study of managerial operations of a small business. Presents issues and problems encountered by those considering entrepreneurial and small business endeavors, including the facets of financing, planning, market research, and strategy for small businesses. *Prereq.* MGT 4102.

MGT 4330 Essentials for Managers of Small Businesses (3 q.h.)

Designed for small business entrepreneurs or persons interested in running a small business. Covers fundamental business concepts, including ownership forms; ongoing market research, capitalization, and management and operating issues; personnel and benefits; risk management; tax considerations; operating finances; and small business strategic positioning. Generally offered in six half-day sessions.

MGT 4340 Small Business 1 (3 q.h.)

Development and completion of a full business plan for entrepreneurs or persons interested in operating a small business. Covers the nature and characteristics of entrepreneurship; personal analysis; generation of ideas and market identification; legal and tax ramifications of ownership forms; marketing research and planning. Optional Lotus 1-2-3 seminar (MIS 4123).

MGT 4341 Small Business 2 (3 q.h.)

The marketing research and development of the marketing plan portion of the overall business plan. Topics include new business capital requirements, including the differences in venture and equity funding; and developing the financial management plan portion of the overall business plan, along with business strategy implications, personnel matters, and the use of computers. *Prereq.* MGT 4340.

MGT 4357 Cultural Issues in International Business (3 q.h.)

When a U.S. company opens an office in a foreign land, cultural clashes may occur. How does management cope and help its employees to cope with these differences? This course examines the problems of doing business in another country, including third-world countries.

MGT 4358 Contemporary Management Issues (3 q.h.)

Study business and management issues affecting today's management decisions. Includes changes in our economic system and the economy; corporate culture; social responsibility; ethics; worker's needs, motivation, and satisfaction; demographics; and management-labor interactions. *Prereq.* MGT 4102.

MGT 4410 Project Management Process: Planning and Implementation (Reserved) (formerly Project Planning and Control) (3 q.h.)

The entire process of implementing a project, from project definition to the evaluation of feasibility, scheduling, and financial and budgetary factors. Management techniques and requirements are used in case analyses, along with the concept of using computer software to help oversee projects. *Prereq.* IM 4401 or IM 4301 and 80 q.h.

MGT 4450 Business Policy 1 (Reserved) (3 q.h.)

For advanced students building on all previous management courses and on numerous functional and procedural courses. Examines the total management process for formulating business strategy. Covers the

development of corporate objectives, plans, and policies, emphasizing the interaction between the enterprise and its environment. The economic and social responsibilities of business and managers are also considered. *Prereq.* 100 q.h. and completion of all core courses in business.

MGT 4451 Business Policy 2 (Reserved) (3 q.h.)

Study of organizational and administrative methods for converting plans into achievements. Explores concepts of strategic planning and implementation from the perspective of the general manager, with attention to top management functions, responsibilities, styles, values, and organizational relationships. Includes cases from profit and nonprofit enterprises of various types. *Prereq.* MGT 4450.

MGT 4452 Business Policy (Reserved) (Intensive) (6 q.h.)

Same as MGT 4450 and MGT 4451. *Prereq.* 100 q.h.

MGT 4455 Manager and Society (Reserved) (3 q.h.)

For managers, potential managers, and others interested in the national and international issues confronting business and industry in their relationships with governments, societies, and individuals. Includes issues of changing work environments and the variety of influences and pressures that need to be taken into account when making socially responsible business decisions. *Prereq.* MGT 4450.

MGT 4456 International Business Management and Operations (Reserved) (3 q.h.)

Principles and practices of international business, comparing domestic and international business activities, responsibilities, and influences. Explores the economic, social, political, and legal contexts of conducting business in a multinational environment and examines how the "foreign" factor in the business equation influences behavior. *Prereq.* MGT 4450.

MGT 4460 Management Seminar 1 (Reserved) (3 q.h.)

Capstone course requiring individual and/or group investigation and analysis of a substantive management issue. Projects should involve broad, interdisciplinary knowledge and experience, use a variety of research techniques, and be original in analysis and conclusions. Topics to be selected with the advice and approval of the instructor. *Prereq.* MGT 4450.

MGT 4461 Management Seminar 2 (Reserved) (3 q.h.)

Continuation of MGT 4460. *Prereq.* MGT 4460.

MGT 4462 Advanced Management Seminar (3 q.h.)

Continuation of group projects from MGT

4460 and MGT 4461. The project must be of major management significance, involving research of a management issue, a management audit, or an organizational analysis, usually of a real company. Enrollment is limited; both enrollment and the project must be approved by the Area Consultant and the Program Director. *Prereq. MGT 4461.*

MGT 4600 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq. 96 q.h., 3.5 q.p.a.*

MGT 4601 Honors Program 2 (4 q.h.)

See MGT 4600.

MGT 4602 Honors Program 3 (4 q.h.)

See MGT 4600.

MGT 4701 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq. 96 q.h., 3.0 q.p.a.*

MGT 4702 Independent Study 2 (3 q.h.)

See MGT 4701.

MGT 4703 Independent Study 3 (3 q.h.)

See MGT 4701.

MGT 4800 Advanced Tutorial 1 (3 q.h.)

Opportunity to take upper level course independently. See page 16 for details. *Prereq. 87 q.h.*

MGT 4801 Advanced Tutorial 2 (3 q.h.)

See MGT 4800.

MGT 4900 Fieldwork (6 q.h.)

Opportunity to enhance career development by applying academic background to practical problems in the workplace. See page 16 for details. *Prereq. Approval of Program Director.*

MANAGEMENT INFORMATION SYSTEMS

MIS 4101 Introduction to Data Processing and Information Systems 1 (3 q.h.)

Introduction to data processing and computers, including an overview of data processing history, business data processing concepts, data processing organization, computer hardware, the internal representation of data, and data communication concepts. In-class demonstration of DOS, wordprocessing, and spreadsheets. Computer labs for students' completion of projects available at Belmont, Boston, Burlington, Chelmsford, Dedham, Framingham, and Liberty Square. Students may also complete projects on any computer available to them.

MIS 4102 Introduction to Data Processing and Information Systems 2 (3 q.h.)

Continuation of MIS 4101. Concentrates on software and systems. Includes the systems-

development life cycle, programming tools and program preparation, the use of computers for specific business applications, database management systems, and high-level programming and planning languages. Class consists of in-class demonstration by instructor on database software. Computer labs for students' completion of projects available at Belmont, Boston, Burlington, Chelmsford, Dedham, Framingham, and Liberty Square. Students may also complete projects on any computer available to them. *Prereq. MIS 4101.*

MIS 4103 Introduction to Data Processing and Information Systems (Intensive) (6 q.h.)

Same as MIS 4101 and MIS 4102.

MIS 4123 Lotus 1-2-3 (1 q.h.)

For business and management students enrolled in certain University College courses. Designed to acquaint students with Lotus 1-2-3 for use in their course activities. Scheduled for four hours on two consecutive Saturdays.

MIS 4220 Introduction to Programming in COBOL (3 q.h.)

Fundamentals of computer programming, along with COBOL (Common Business Oriented Language) and its divisions, data file structures, and verb actions. Students prepare and test several programs using the University computer system. *Prereq. MIS 4102 or MIS 4103.*

MIS 4221 COBOL Programming 1 (3 q.h.)

Beginning computer problem solving and programming using COBOL. Includes structured flow-charting and programming techniques, use of an editor for program generation, input/output record layouts, and basic concepts, such as COBOL divisions and verbs. Students prepare and test several programs using the University computer system. *Prereq. MIS 4102 or MIS 4103.*

MIS 4222 COBOL Programming 2 (3 q.h.)

Continuation of MIS 4221. Includes logical control breaks, creation of multipage reports, sign and class tests, verification of input data, and table handling (subscripting and indexing). Students prepare and test several programs using the University computer system. *Prereq. MIS 4221.*

MIS 4223 COBOL Programming 3 (3 q.h.)

Continuation of MIS 4222. Includes advanced programming techniques, such as the internal sort facility and indexed file processing. Students prepare and test several programs using the University computer system. *Prereq. MIS 4222.*

MIS 4225 COBOL Programming (Intensive) (9 q.h.)

Same as MIS 4221, MIS 4222, and MIS 4223. *Prereq. MIS 4102 or MIS 4103.*

MIS 4230 PC Software for Professionals (formerly End User Software) (3 q.h.)

Study of the large and rapidly growing collection of software geared toward the needs of the nontechnical end user. Includes discussion of various software packages such as spreadsheets, databases, and graphics.

MIS 4235 Advanced COBOL Programming (3 q.h.)

Several kinds of programming disciplines for the COBOL programmer. Techniques include STRING and UNSTRING; CALL subroutines; table handling with one, two, and three dimensions; Indexed Sequential Access Method (ISAM) processing; DEBUG; communications; and copy. *Prereq. MIS 4223 or MIS 4225.*

MIS 4236 Advanced PC Software (3 q.h.)

Advanced skills in spreadsheets, graphics, database, and advanced commands in PC/MS-DOS. Includes lectures, in-class demonstrations, and extensive assignments that apply skills. Not for the first-time personal computer user. *Prereq. MIS 4230 or equiv.*

MIS 4240 Introduction to Programming in BASIC (3 q.h.)

Stand-alone introduction to computer programming using BASIC, one of the most popular programming languages for both personal and mini-computers. Students write, debug, and run a number of programs on the computer. *Prereq. MIS 4102.*

MIS 4241 Programming in BASIC 1 (3 q.h.)

Introduction to computer programming using BASIC. Includes arithmetic operators, variables, expressions, arrays, functions, and formatted printing. Students write, debug, and run a number of programs on the computer. *Prereq. MIS 4102.*

MIS 4242 Programming in BASIC 2 (3 q.h.)

Continuation of MIS 4241. Covers more sophisticated BASIC programming techniques. Includes subroutines, nested loops, sorting, and file handling. Students write, debug, and run a number of programs on the computer. *Prereq. MIS 4240 or MIS 4241.*

MIS 4250 FORTRAN Programming 1 (3 q.h.)

Introduction to computer programming using FORTRAN, a high-level language used primarily in scientific applications. Includes variables, constants, expressions, arithmetic operations, and looping. Students write, debug, and run a number of programs on the computer. *Prereq. MIS 4102.*

MIS 4251 FORTRAN Programming 2 (3 q.h.)

Continuation of MIS 4250. Covers more complex FORTRAN programming. Includes arrays, functions, and subroutines. Students write, debug, and run a number of programs on the computer. *Prereq. MIS 4250.*

MIS 4252 FORTRAN Programming 3 (3 q.h.)

Continuation of MIS 4251. Emphasizes applications and case studies. Students write a series of programs for scientific and business problems to gain proficiency in the FORTRAN language. Typical topics include simulation, sorting and merging, plotting, and financial analysis. Students write, debug, and run a number of programs on the computer. *Prereq. MIS 4251.*

MIS 4253 FORTRAN Programming (Intensive) (9 q.h.)

Same as MIS 4250, MIS 4251, and MIS 4252. *Prereq. MIS 4102.*

MIS 4260 Assembly Programming 1 (3 q.h.)

Introduction to the VAX-11 Assembler running under the VMS operating system. Includes the binary representation of instructions and data, looping, instruction modification, indexing, indirect addressing, and data retrieval. Includes a brief survey of Assembly languages in general. *Prereq. Demonstrated familiarity with any currently available computer language.*

MIS 4261 Assembly Programming 2 (3 q.h.)

Continuation of MIS 4260. Includes addressing structures, floating-point techniques, coding, use of macro instructions, input-output routines, use of the operating system for job scheduling resource allocation, and file handling. *Prereq. MIS 4260.*

MIS 4262 Assembly Programming 3 (3 q.h.)

Continuation of MIS 4261. Includes advanced use of the operating system, device-independent file handling, and blocked and unblocked file manipulation. *Prereq. MIS 4261.*

MIS 4263 Assembly Programming Intensive (6 q.h.)

Same as MIS 4261 and MIS 4262. *Prereq. Demonstrated familiarity with any currently available computer language.*

MIS 4270 Pascal Programming 1 (3 q.h.)

Introduction to computer programming using the Pascal language. Includes arrays of records, text files, record files, and procedures and functions. Students write, debug, and run a number of programs on the computer. *Prereq. MIS 4102.*

MIS 4271 Pascal Programming 2 (3 q.h.)

Continuation of MIS 4270. Covers more sophisticated Pascal features. Includes

multidimensional arrays, recursion, file sorting and merging techniques, sets, and structures. Students write, debug, and run a number of programs on the computer. *Prereq.* MIS 4270.

MIS 4273 PC DOS and Assembly (3 q.h.)

Introduction to the Disk Operating System (DOS), a collection of programs that manages the activities among personal computer components. The Personal Computer (PC) Assembly language is also discussed. Students have the opportunity to write a small Assembly language routine and one or more DOS batch routines. *Prereq.* MIS 4102.

MIS 4276 Programming in C (3 q.h.)

Fundamentals of the C programming language, I/O operations, arithmetic operations, loops, arrays, character strings, functions. Structures, file organization (textfiles, random access files). Pointers, queues, stacks, rings, binary trees. *Prereq.* Knowledge of at least one other programming language.

MIS 4280 Computer Operating Systems 1 (3 q.h.)

Intended for those familiar with data processing and interested in developing, evaluating, and using systems programs. Examines the full range of features available in a variety of computer operating systems in terms of structure and form. Compares operating systems implementation techniques employed by different computer manufacturers, with emphasis on their value as tools for application program development. Refers generally to IBM operating systems, but also to other manufacturers, including Digital and Data General. *Prereq.* MIS 4220 or MIS 4221.

MIS 4281 Computer Operating Systems 2 (3 q.h.)

Building on concepts and techniques presented in MIS 4280, introduces distributed systems and networking software, a variety of data-base systems, and the UNIX operating system. Includes discussions of local and wide-area networking systems and operating systems features. Expands data management as an operating systems feature to include data-base systems available from various computer manufacturers and software suppliers. *Prereq.* MIS 4280.

MIS 4301 Structured Systems Analysis and Design 1 (Open) (3 q.h.)

Systems analysis and design cycle, with emphasis on the analysis phase. Includes the history and life-cycle of business information systems, the role of the systems analyst, analytical tools useful to the systems study

process, development of feasibility studies, and presentation of study phase findings.

Prereq. MIS 4102.

MIS 4302 Structured Systems Analysis and Design 2 (Open) (3 q.h.)

Continuation of MIS 4201. Emphasizes the design phase and systems implementation. Includes detailed systems design procedures and techniques, system testing, specification and procedure writing, documentation, design of auditing and control procedures, performance measurement techniques, hardware and software selection and planning, and project management. *Prereq.* MIS 4301 or MIS 4401.

MIS 4305 Structured Systems Analysis and Design (Intensive) (Open)

Same as MIS 4301 and MIS 4302.

MIS 4307 Communications and Networking (Open) (3 q.h.)

Communications, networking, and distributed processing from the user's rather than the designer's point of view. Includes the economics of distributed processing, communications concepts, local-area networks, and vendor selection. *Prereq.* MIS 4302 or MIS 4402.

MIS 4350 Auditing Data Processing (3 q.h.)

EDP audit techniques, programming, and operations, emphasizing EDP standard practices, procedures, documentation, and safety and security. Defines EDP business risks and related exposures, such as fraud, embezzlement, misuse or destruction of company assets, and business interruption. Offers discussion of the EDP portion of accounting requirements of the Foreign Corrupt Practices Act of 1977. Course content is oriented toward EDP managers, internal auditors, and public accountants. *Prereq.* MIS 4102.

MIS 4360 Computer Privacy and Security (3 q.h.)

Threats posed by and to modern electronic computers and their users. Includes a review of the issue of privacy and approaches, techniques, and tools used to safeguard computers. Uses actual case studies of computer abuse. *Prereq.* MIS 4102.

MIS 4401 Structured Systems Analysis and Design 1 (Reserved) (3 q.h.)

Systems analysis and design cycle, with emphasis on the analysis phase. Includes the history and life-cycle of business information systems, the role of the systems analyst, analytical tools useful to the systems study process, development of feasibility studies, and presentation of study phase findings. *Prereq.* MIS 4102 and 80 q.h.

MIS 4402 Structured Systems Analysis and Design 2 (Reserved) (3 q.h.)

Continuation of MIS 4301. Emphasizes the design phase and systems implementation. Includes detailed systems design procedures and techniques, system testing, specification and procedure writing, documentation, design of auditing and control procedures, performance measurement techniques, hardware and software selection and planning, and project management. *Prereq.* MIS 4401 or MIS 4301 and 80 q.h.

MIS 4405 Structured Systems Analysis and Design (Reserved) (Intensive) (6 q.h.)

Same as MIS 4401 and MIS 4402.

MIS 4407 Communications and Networking (Reserved) (3 q.h.)

Communications, networking, and distributed processing from the user's rather than the designer's point of view. Includes the economics of distributed processing, communications concepts, local-area networks, and vendor selection. *Prereq.* MIS 4402 or MIS 4302 and 80 q.h.

MIS 4445 DataBase Management Systems (Reserved) (3 q.h.)

Introduction to the database approach to design of integrated information applications. Covers the three methods of database design; data structures; diagramming; data definition languages; data manipulation languages; database implementation and evaluation; and the role of the database administrator. *Prereq.* MIS 4222, MIS 4230, and MIS 4302 or MIS 4402 and 80 q.h.

MIS 4448 Information Resource Management (Reserved) (3 q.h.)

Advanced information systems management, emphasizing planning, organizing, and controlling the corporate information resource. Includes personnel career planning, turnover, facilities and capacity planning, the user interface, standards development, RFP generation and vendor selection, hardware and software conversion problems, and disaster recovery. *Prereq.* MIS 4445.

MIS 4485 Applied MIS Development Project (Reserved) (3 q.h.)

Capstone systems course integrates knowledge and abilities gained through other computer-related courses in the curriculum, within a comprehensive systems development project. *Prereq.* MIS 4448.

MIS 4600 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 g.p.a.

MIS 4601 Honors Program 2 (4 q.h.)

See MIS 4600.

MIS 4602 Honors Program 3 (4 q.h.)

See MIS 4600.

MIS 4701 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 g.p.a.

MIS 4702 Independent Study 2 (3 q.h.)

See MIS 4701.

MIS 4703 Independent Study 3 (3 q.h.)

See MIS 4701.

MIS 4800 Advanced Tutorial 1 (3 q.h.)

Opportunity to take upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.

MIS 4801 Advanced Tutorial 2 (3 q.h.)

See MIS 4800.

MIS 4900 Fieldwork (6 q.h.)

Opportunity to enhance career development by applying academic background to practical problems in the workplace. See page 16 for details. *Prereq.* Approval of Program Director.

MARKETING**MKT 4301 Introduction to Marketing 1 (Open)** (3 q.h.)

This course consists of lectures, readings and small group discussions on the role of marketing in contemporary society, in the business enterprise, and in the nonprofit organization. Consideration is given to the planning, operation, and evaluation of marketing and promotional efforts necessary to the effective marketing of consumer and industrial products and services in both profit and nonprofit organizations.

MKT 4302 Introduction to Marketing 2 (Open) (3 q.h.)

Continuation of MKT 4301. Develops the link between marketing theory and practice. Covers specific marketing issues and problems. Includes case study analysis and current marketing issues. *Prereq.* MKT 4401 or MKT 4301.

MKT 4304 Introduction to Marketing (Intensive) (Open) (6 q.h.)

Same as MKT 4301 and MKT 4302.

MKT 4307 Telemarketing Management (3 q.h.)

The place of telemarketing in the marketing program. Key concepts of telemarketing in the advertising, sales promotion, market research, and selling process.

MKT 4320 Marketing Management 1 (Open) (3 q.h.)

This course is designed to provide training in marketing decision making. Case studies simulating actual business settings are used to help students develop analytical abilities

and sharpen their communication skills. Topics covered range from techniques used to analyze a market to the development of a total marketing strategy (product policy, pricing policy, promotion policy, and distribution policy). *Prereq.* 4401 or MKT 4301.

MKT 4321 Marketing Management 2 (Open) (3 q.h.) Continuation of MKT 4320. Presents skills for controlling marketing plans, and is designed for a more thorough understanding of overall marketing function. Emphasizes managerial effectiveness through practical applications. *Prereq.* MKT 4320.

MKT 4322 Marketing Management (Intensive) (Open) (6 q.h.) Same as MKT 4320 and MKT 4321. *Prereq.* MKT 4301.

MKT 4330 Marketing Research 1 (Open) (3 q.h.) Use of marketing research in planning and evaluating marketing activities and in formulating marketing decisions. Introduces marketing information systems, primary and secondary, quantitative and qualitative research use of market research for demand measurement and forecasting, product research, advertising research, and test marketing. Course is taught from the viewpoint of the user of marketing research. *Prereq.* MKT 4420 or MKT 4320.

MKT 4335 Public Relations 1 (3 q.h.) Introduction to the basic principles, purposes, and practices of public relations in both commercial and nonprofit organizations. Emphasizes organization, research, and writing fundamentals.

MKT 4336 Public Relations 2 (3 q.h.) Continuation of MKT 4335. Emphasizes the development of public relations programs for specific publics. *Prereq.* MKT 4335.

MKT 4337 Advertising and Promotion (3 q.h.) For nonbusiness majors. Focuses on advertising, sales promotion, public relations, publicity, and personal selling as important elements in the marketing process. Also examines the ethical, social, and economic aspects of advertising and promotion.

MKT 4340 Retail Management 1 (3 q.h.) Concepts and techniques of store operations and merchandise management. Focuses on the activities and contributions of various retailing institutions, such as independents, chains, dealerships, specialty stores, super-markets, discount stores, and franchises. Also includes retail management, retail profit and loss, starting a retail business, store location,

store planning, and the retail organization. *Prereq.* MKT 4301.

MKT 4341 Retail Management 2 (3 q.h.) Continuation of MKT 4340. Emphasizes store operations; merchandising planning, control, and management; pricing; buying; sales promotion; customer service; retail accounting; and expense management. *Prereq.* MKT 4340.

MKT 4352 Professional Selling Skills (Intensive) (6 q.h.) Opportunity to develop effective selling skills. Examines the customer buying process and the company sales process. Discusses prospecting, preparation, presentation, and post-sale activities and introduces advanced selling techniques, such as team selling. Focuses on situations where personal selling is a major element of marketing strategy, such as in industrial-product, professional-service, and high-technology marketing. *Prereq.* MKT 4302.

MKT 4355 High-Technology Marketing (3 q.h.) The company's marketing function in transforming technology into products. Discusses planning for product innovation, linkages between marketing and engineering, and communications strategies for marketing high-technology products. *Prereq.* MKT 4302.

MKT 4358 Marketing and Sales Seminar (3 q.h.) Capstone marketing elective focusing on the formulation and implementation of overall marketing strategy. *Prereq.* MKT 4331.

MKT 4401 Introduction to Marketing 1 (Reserved)* (3 q.h.)

This course consists of lectures, readings and small group discussions on the role of marketing in contemporary society, in the business enterprise, and in the nonprofit organization. Consideration is given to the planning, operation, and evaluation of marketing and promotional efforts necessary to the effective marketing of consumer and industrial products and services in both profit and nonprofit organizations. *Prereq.* 80 q.h.

MKT 4402 Introduction to Marketing 2 (Reserved) (3 q.h.)

Continuation of MKT 4401. Develops the link between marketing theory and practice. Covers specific marketing issues and problems. Includes case study analysis and current marketing issues. *Prereq.* MKT 4401 or MKT 4301 and 80 q.h.

MKT 4404 Introduction to Marketing (Intensive) (Reserved) (6 q.h.)

Same as MKT 4401 and MKT 4402.

*Open section available. Call 617-437-2418.

MKT 4410 Advertising Management 1 (Reserved)

(3 q.h.)

This course focuses on the management of the advertising function in relation to a firm's overall marketing objectives. The course approaches the subject from the perspective of the user of advertising (e.g., product manager, marketing manager). Case studies and text material are used to help the student develop decision-making skills. *Prereq. MKT 4420 or MKT 4320 and 80 q.h.*

MKT 4411 Advertising Management 2 (Reserved) (3 q.h.)

Continuation of MKT 4410. Surveys why and how advertising works, and includes challenging and practical case studies. *Prereq. MKT 4420 or MKT 4320 and 80 q.h.*

MKT 4412 Advertising Management (Reserved)

(Intensive) (6 q.h.)

Same as MKT 4410 and MKT 4411. *Prereq. MKT 4420 or 4320 and 80 q.h.*

MKT 4415 Sales Management 1 (Reserved)* (3 q.h.)

Allows student to develop effective selling skills. Examines the customer buying process and the company sales process. Discusses prospecting, preparation, presentation, and post-sale activities and introduces advanced selling techniques, such as team selling. Focuses on situations where personal selling is a major element of marketing strategy, such as industrial-product, professional-service, and high-technology marketing. *Prereq. MKT 4420 or MKT 4320 and 80 q.h.*

MKT 4416 Sales Management 2 (Reserved) (3 q.h.)

This course is designed to help the student develop decision-making skills necessary for both building and maintaining an effective sales organization. Cases and readings are used to examine the strategic and operating problems of the sales manager. Major topic areas include the selling function, sales management at the field level, and the sales executive. *Prereq. MKT 4415 or MKT 4315 and 80 q.h.*

MKT 4417 Sales Management (Reserved) (Intensive)

(6 q.h.)

Same as MKT 4415 and MKT 4416. *Prereq. MKT 4420 or MKT 4320 and 80 q.h.*

MKT 4420 Marketing Management 1 (Reserved) (3 q.h.)

This course is designed to provide training in marketing decision making. Case studies simulating actual business settings are used to help students develop analytical abilities and sharpen their communications skills.

Topics range from techniques used to analyze a market to the development of a total marketing strategy (product policy, pricing policy, promo-

tion policy, and distribution policy). *Prereq. MKT 4401 or MKT 4301 and 80 q.h.*

MKT 4430 Marketing Research 1 (Reserved) (3 q.h.)

Use of marketing research in planning and evaluating marketing activities and in formulating marketing decisions. Introduces marketing information systems, primary and secondary, quantitative and qualitative research use of market research for demand measurement and forecasting, product research, advertising research, and test marketing. Course is taught from the viewpoint of the user of marketing research.

Prereq. MKT 4420 or MKT 4320 and 80 q.h.

MKT 4431 Marketing Research 2 (Reserved) (3 q.h.)

Course focuses on the techniques and procedures required to conduct high quality research studies. Topics include problem definition, exploratory research, research design, sampling techniques, questionnaire development, data collection methods, survey errors, and processing and analyzing research data. Course is taught from the viewpoint of the person who conducts market research studies. *Prereq. MKT 4430 or MKT 4330 and 80 q.h.*

MKT 4453 International Marketing 3 (Reserved) (3 q.h.)

This course is designed to help familiarize the student with those aspects of marketing that are unique to international business within the framework of traditional functional areas of marketing. The focus is on the environment and the modifications of marketing concepts and practices necessitated by environmental differences. Topics include cultural dynamics in international markets, political and legal environmental constraints, educational and economic constraints, international marketing research, international marketing institutions, and marketing practices abroad. *Prereq. MKT 4420 or MKT 4320 and 80 q.h.*

MKT 4457 Competitive Strategy (Reserved) (3 q.h.)

A capstone marketing course, required of all students with a marketing concentration. The focus is on the formulation of marketing strategy at a policy level and its implementation in a dynamic environment. *Prereq. MKT 4420 or MKT 4320 and 80 q.h.*

MKT 4600 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq. 96 q.h., 3.5 g.p.a.*

MKT 4601 Honors Program 2 (4 q.h.)

See MKT 4600.

MKT 4602 Honors Program 3 (4 q.h.)

See MKT 4600.

MKT 4701 Independent Study 1 (3 q.h.)
Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

MKT 4702 Independent Study 2 (3 q.h.)
See MKT 4701.

MKT 4703 Independent Study 3 (3 q.h.)
See MKT 4701.

MKT 4800 Advanced Tutorial 1 (3 q.h.)
Opportunity to take upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.

MKT 4801 Advanced Tutorial 2 (3 q.h.)
See MKT 4800.

MKT 4900 Field Work (6 q.h.)
Opportunity to enhance career development by applying academic background to practical problems in the workplace. See page 16 for details. *Prereq.* Approval of Program Director.

MEDICAL LABORATORY SCIENCE

MLS Courses at Special Tuition Rate
Course descriptions for medical laboratory science courses numbered MLS 1—are available from the College of Pharmacy and Allied Health Professions, 206 Mugar Building. Call 617-437-3664.

MLS 4301 Medical Laboratory Science Orientation (2 q.h.)
Scope, responsibilities, opportunities, and educational requirements for the medical laboratory science professions. Medical terminology and laboratory mathematics are included.

MLS 4321 Hematology* (1 cl., 3 lab., 3 q.h.)
Basic hematological techniques, including discussion of the differential smear and observation of the normal morphology of human red cells, white cells, and platelets. (Laboratory fee.) *Prereq.* BIO 4104 or equiv. Not open to medical technology or hematology majors.

MLS 4322 Morphologic Hematology 1* (1 cl., 3 lab., 3 q.h.)
Morphologic and etiologic classification of the anemias. Related diagnostic tests are discussed. (Laboratory fee.) *Prereq.* MLS 4321 or equiv.

MLS 4323 Morphologic Hematology 2* (1 cl., 3 lab., 3 q.h.)
Studies of pathologic and physiologic deviations of the white cells series as observed in leukemias and infections. Some animal hematology is included. (Laboratory fee.) *Prereq.* MLS 4322 or equiv.

MLS 4341 Epidemiology 1* (3 q.h.)
Basic concepts in epidemiology, the distribution in determinants of diseases and injuries in human populations. Descriptive and

analytical epidemiology studies are included.

MLS 4342 Epidemiology 2 (3 q.h.)
Microbiological distributions in determinants of infectious diseases; hospital epidemiology.

MLS 4352 Basic MLS Electronics and Instrumentation (2 q.h.)

Electricity, with coverage of introductory electronic circuits. Emphasizes medical laboratory instrumentation and related electrical processes of measurement.

MLS 4365 Quality Control (3 q.h.)
Development of quality control programs in each medical laboratory specialty. Includes applications of statistical methods to medical laboratory quality control programs.

MLS 4381 Seminar in Medical Technology (3 q.h.)
Current topics in medical technology. Includes required readings and presentations by students; guest lecturers. *Prereq.* instructor's permission.

MLS 4700 Advanced Tutorial 1 (3 q.h.)
Opportunity to take upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.

MLS 4701 Advanced Tutorial 2 (3 q.h.)
See MLS 4700.

MANAGEMENT SCIENCE

MS 4325 Business Decision Models (formerly Introduction to Modeling and Simulation) (3 q.h.)
Modeling as a method for gaining insight into the underlying mathematical structure of business problems. Discusses specific modeling techniques, such as linear programming and simulation. *Prereq.* MTH 4111 and ECN 4251.

MS 4332 Statistical Quality Control (3 q.h.)
Practical course in analytical methods in quality control. The application of basic statistical controls in the industrial and service sectors. Includes control charts, statistical tolerancing, acceptance sampling techniques, life testing, and reliability concepts. *Prereq.* ECN 4251.

MS 4333 Management of Quality Control (3 q.h.)
Management practices of modern quality control and the different approaches to optimizing quality. Includes organizational strategies, economics of quality, internal and external quality, and management of long-term quality and reliability. *Prereq.* MS 4332.

MS 4334 Advanced Quality Control (3 q.h.)
Quality control topics of current interest. Typical subjects include Asian quality methods, advanced process capability techniques, use of computers in quality control, and integration of quality and reliability programs. *Prereq.* MS 4333.

*Offered even-numbered academic years.

MS 4335 Principles of Material Inspection (3 q.h.)
Bridges the gap between manufacturing and data analysis, with emphasis on the measuring process. In-class labs provide hands-on training in the use of a wide variety of mechanical measuring devices. Lectures demonstrate the fundamental measuring principles involved and illustrate their extension to all measuring processes.

MS 4336 Industrial Experimentation (3 q.h.)
Practical techniques for data collection that can greatly extend students' problem-solving skills. Includes instruction in extracting maximum information from small samples and avoiding many common data-analysis pitfalls. Other topics include randomized tests, multi-level tests, two-level multi-factor tests, and Taguchi methods. *Prereq.* ECN 4251 or equiv.

MS 4337 Principles of Quality Assurance (3 q.h.)
The modern quality function from its beginnings in product design to vendor selection, incoming inspection, monitoring of the manufacturing process, final product testing, and customer acceptance. Includes defining quality, quality organization, sampling plans, control charts, and quality assurance reporting.

MATH

MTH 4100 Conquering Math 1 (Noncredit)
Designed for those persons with anxiety about using math, or who have had minimal exposure to it. The course begins with an explanation of numbers and arithmetic operations. It concludes with the arithmetic manipulation of numbers, such as: slope, averages, and percents. Word problems are used throughout the course. Upon successful completion of the course, the student will be prepared to take applicable college credit mathematics courses.

MTH 4101 Conquering Math 2 (Noncredit)
A continuation of Conquering Math 1.

MTH 4001 Introduction to Mathematics 1 (3 q.h.)
Review of elementary algebra, including operations on integers, algebraic expressions, exponents, equations, word problems, and graphing. *Credit for this course cannot be applied to School of Engineering Technology degree programs.*

MTH 4002 Introduction to Mathematics 2 (3 q.h.)
Further review of mathematics, including operations with polynomials, factoring, fractional expressions, and radicals. *Credit for this course cannot be applied to School of Engineering Technology degree programs. Prereq.* MTH 4001.

MTH 4006 Technical Mathematics* (4 q.h.)
Reviews high school algebra equations, formulas, exponents, polynomials, factoring, scientific notation, fractions, radicals, complex numbers, quadratic equations, and linear equations. (Credit cannot be used in the associate in engineering, associate in science, or the bachelor of engineering technology degree programs.)

MTH 4107 College Algebra* (4 q.h.)
Diagnostic exam to ensure appropriate placement. Topics include exponents, radicals, factoring, and operations with fractions; operations with sets, and solving linear, quadratic and absolute value equations and inequalities. Also covered are equations involving radicals; operations with imaginary and complex numbers; graphing linear, quadratic, and polynomial functions; direct and inverse variation; solving higher degree polynomial equations; and an introduction to partial fractions. *Prereq.* Math diagnostic exam or MTH 4006.

MTH 4108 Pre-Calculus* (4 q.h.)
Topics include composite and inverse functions; logarithmic and exponential functions and equations; properties of logs and introduction to base e ; trigonometric functions, identities, and equations; and solving triangles by applying law of sines and cosines. Also covered are polar form of complex numbers and DeMoivre's formula; solving systems of linear equations by Cramer's rule; solving nonlinear systems in two variables; arithmetic and geometric sequences and series; factorials, combinatorials, and the binomial expansion formula. *Prereq.* MTH 4107.

MTH 4110 Math 1 (3 q.h.)
Exponents, polynomials, factoring, radicals, algebraic fractions, linear equations, and word problems. *Prereq.* One year of high school algebra or its equiv. A placement test is given during the first class meeting. Students who obtain an unsatisfactory score on this test are advised to enroll in MTH 4001 instead for additional preparation. *Credit for this course cannot be applied to School of Engineering Technology degree programs.*

MTH 4111 Math 2 (3 q.h.)
Word problems, quadratic equations and related problems, graphs and functions, and systems of equations. *Credit for this course cannot be applied to School of Engineering Technology degree programs. Prereq.* MTH 4110.

**This is a School of Engineering Technology course, which is offered at a different tuition rate than that of University College.*

MTH 4112 Math 3 (3 q.h.)

Exponential and logarithmic functions, sequences, and series. Introduction to calculus. *Credit for this course cannot be applied to School of Engineering Technology degree programs. Prereq. MTH 4111.*

MTH 4113 Mathematics (Intensive) (9 q.h.)

Same as MTH 4110, MTH 4111, and MTH 4112.

MTH 4114 Mathematics 1 and 2 Combination (6 q.h.)

Same as MTH 4110 and MTH 4111.

MTH 4120 Calculus 1* (4 q.h.)

Topics include plane analytic geometry of the line, circle, parabola, ellipse, and hyperbola; review of inequalities and general function operations; theory and evaluation of limits; derivatives of algebraic and trigonometric functions; and general rules of differentiation. Also covered are Rolle's theorem; Mean Value theorem; applications of differentiation including velocity, acceleration, related rates, maxima and minima, curve sketching, and approximations by differentials. *Prereq. MTH 4108.*

MTH 4121 Calculus 2* (4 q.h.)

Examines antiderivative and development of the fundamentals theorem with applications to areas, volumes, and rectilinear motion problems. Topics include the logarithmic exponentials, and inverse trigonometric functions and their applications; techniques of integration including parts, partial fractions, substitution, and the use of tables, numerical integration (Simpson's and Trapezoidal Rule); L'Hospital's Rule; improper integrals, and the geometry of vectors in a plane and space. *Prereq. MTH 4120*.*

MTH 4122 Calculus 3* (4 q.h.)

Studies three-dimensional space and a treatment of functions of several variables; multiple integrals with applications in areas and volumes; sequences and series; differential equations, including the solution with applications of first-order with variables separable, first-order linear, and second-order linear homogeneous to complete the sequence. *Prereq. MTH 4121*.*

MTH 4123 Differential Equations* (4 q.h.)

Linear differential equations with constant coefficients, homogeneous and nonhomogeneous, are examined. Explores the variation of parameters and undermines coefficients and simultaneous differential equations, the Laplace transform series and solution of differential equations, and the Fourier series. Orthogonal functions and numerical

solutions of differential equations are studied. *Prereq. MTH 4122*.*

MTH 4130 Fundamentals of Calculus 1 (3 q.h.)

Introductory course intended for students in liberal arts, business administration, and other nonengineering curricula. Includes fundamentals of differential calculus, rules of differentiation, rates of change, graph sketching, and growth and decay function. *Credit for this course cannot be applied to School of Engineering Technology degree programs. Prereq. MTH 4112 or equiv.*

MTH 4131 Fundamentals of Calculus 2 (3 q.h.)

Applications of differential calculus, including problems in optimization, velocity and acceleration, compound interest, population growth, and the fitting of equations to data. Introduces integral calculus, areas, average values of functions, marginal cost and profit, and depreciation. *Credit for this course cannot be applied to School of Engineering Technology degree programs. Prereq. MTH 4130.*

MTH 4132 Fundamentals of Calculus 3 (3 q.h.)

Calculus of trigonometric functions, techniques of integration, numerical methods, and differential equations. Applications include pricing, allocation of funds, present value of an investment, manufacturing efficiency, and product reliability. *Credit for this course cannot be applied to School of Engineering Technology degree programs. Prereq. MTH 4131.*

MTH 4140 Mathematics for Business Management 1 (3 q.h.)

Mathematics topics applicable to business management, such as linear equations and inequalities, matrix algebra, linear programming, sets, and counting techniques. *Prereq. MTH 4112 or equiv.*

MTH 4141 Mathematics for Business Management 2 (3 q.h.)

Business applications of probability, decision theory, Markov chains, game theory, and competitive analysis. *Prereq. MTH 4140.*

MTH 4143 Mathematics for Business Management (Intensive) (6 q.h.)

Same as MTH 4140 and MTH 4141.

MTH 4520 Statistically Thinking (3 q.h.)

Introduction to statistical mode of thinking. Presents the essential logic of statistical analysis to allow the student to critically evaluate research published in professional journals as well as newspapers. The process of collecting, analyzing, and interpreting data is discussed, as well as the use of computers in

*This is a School of Engineering Technology course, which is offered at a different tuition rate than that of University College.

statistical analysis. Lectures used in conjunction with discussions of outside readings to illustrate concepts.

MTH 4700 Advanced Tutorial 1 (3 q.h.)

Opportunity to take upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.

MTH 4701 Advanced Tutorial 2 (3 q.h.)

See MTH 4700.

MUSIC

MUS 4100 Introduction to Music (3 q.h.)

Selected works from earliest times to contemporary styles. Primarily a survey and listening course that emphasizes styles, basic theory, forms, and the historical, social, and artistic periods each work represents.

MUS 4103 Music and Society (3 q.h.)

The artist's involvement with recurring social themes such as self-image, the search for peace and understanding, personal relationships, and others. Examines paintings and literary works in addition to works by Beethoven, Schoenberg, Britten, and selected jazz composers.

MUS 4105 Music of the U.S.A. (3 q.h.)

American music from Puritan psalm singing to the present. Covers folk music of ethnic origin, concert music, ragtime, jazz, and contemporary styles.

MUS 4106 Women in Music (3 q.h.)

The historical role of women in music, as composers, performers, patrons, and inspiration.

MUS 4110 Music in Popular Culture (3 q.h.)

Investigation of American attitudes toward culture, art, and beauty through consideration of contemporary popular music. Compares the different styles of pop music (jazz, rock, MOR, and R&B) and traces their evolution. Examines the manipulation of public tastes by large corporations for commercial purposes.

MUS 4111 Rock Music (3 q.h.)

History of rock music from its origins in American blues and other styles through the popular music of the 1950s, the political styles of the 1960s, and the diverse trends of the 1970s. Emphasizes the formative years of rock.

MUS 4112 Jazz (3 q.h.)

Jazz, from its origins in New Orleans to the avant-garde experiments of today. Includes analysis of the rhythmic, harmonic, instrumental, and stylistic characteristics of jazz. Covers

the works of such creative jazz artists as Armstrong, Beiderbecke, Parker, Ellington, and Coltrane.

MUS 4120 History of Musical Styles (3 q.h.)

Chronological examination of Western music, including its role in society and the contributions of influential Western composers.

Reviews representative works from each period, with music by Bach, Handel, Haydn, Mozart, Beethoven, Brahms, Berlioz, Wagner, Mahler, and Stravinsky.

MUS 4121 Medieval and Renaissance Music (3 q.h.)

Development of sacred and secular monophony, vocal and instrumental works, and polyphonic music from their beginnings to about 1600.

MUS 4122 Music of the Baroque (3 q.h.)

The period of the emergence of the orchestra, the chorus, and the virtuoso performer and the development of the oratorio, opera, concerto, and symphony in the works of Monteverdi, Corelli, Vivaldi, Handel, and J. S. Bach.

MUS 4123 Music History of the Classical Period (3 q.h.)

Study of changing musical styles from Stamitz and the Mannheim School through the works of Haydn, Mozart, and early Beethoven.

MUS 4124 Music History of the Romantic Era (3 q.h.)

Musical styles of the nineteenth century, including the role of music and the musician in the changing social, economic, political, and cultural structure of Europe. Analyzes music by Beethoven, Schubert, Berlioz, Brahms, Verdi, and Wagner.

MUS 4125 Music History of the Twentieth Century (3 q.h.)

The diversity of styles from Debussy through Stravinsky, Schoenberg, Bartok, and Hindemith and more recent developments, including *musique concrete*, chance music, and electronic music.

MUS 4130 The Symphony (3 q.h.)

The symphony as the major genre in the Classical, Romantic, and contemporary periods. Covers works by Haydn, Mozart, Beethoven, Schumann, Tchaikovsky, Brahms, and Sibelius.

MUS 4132 The World of Opera (3 q.h.)

Opera as a dramatic form, including discussion of aria, recitative, ensemble, and other basic elements. Considers numbers opera, music drama, and *Singspiel* and such composers as Mozart, Wagner, Verdi, and Puccini.

MUS 4133 Great Choral Literature (3 q.h.)

Sacred and secular choral literature from medieval to contemporary times.

MUS 4244 Voice Class (3 q.h.)

Basic vocal production required for fine singing. Repertoire, both classical and contemporary, is chosen for each student to learn and perform in lessons and outside of class. Includes lectures concerning diction, the physiology of singing, resonance, registers, interpretation, and the basics of music reading and sight-singing. Also includes class analysis of recordings of great vocal artists.

MUS 4247 Guitar Class 1 (3 q.h.)

Intended for beginners. Covers basic classical guitar techniques, including proper sitting and hand positions, note reading, and ensemble playing. Instruments, preferably nylon-strung, are required.

MUS 4248 Guitar Class 2 (3 q.h.)

Intended for those who have taken MUS 4247 or who already have a basic knowledge of classical guitar techniques and note reading. Introduces both solo and ensemble repertoire suitable to the advanced beginner. *Prereq.* MUS 4247 or instructor's permission.

MUS 4249 Guitar Class 3 (3 q.h.)

Continuation of MUS 4248, with repertoire suitable for early intermediate students. *Prereq.* MUS 4248 or instructor's permission.

MUS 4250 Conducting (3 q.h.)

Introduction to how to develop a clear beat technique and prepare, teach, and polish a work in rehearsal. Provides exposure to a basic repertoire and the essentials of vocal-instrumental production. *Prereq.* *Fundamental knowledge of music reading and concurrent membership in a performing ensemble.*

MUS 4254 Music Tutorial 1 (3 q.h.)

Individual instruction in a musical instrument or in voice. Features weekly forty-five-minute lessons at any level, presenting suitable instrumental technique and repertoire. Requires those taking the course for credit to play an audition examination at the end of the quarter. Fee for individualized instruction; special rate for Northeastern University staff. For details, contact the Department of Music, 307 Ell Building, 617-437-2440.

MUS 4255 Music Tutorial 2 (3 q.h.)

Continuation of MUS 4254. *Prereq.* MUS 4254.

MUS 4256 Music Tutorial 3 (3 q.h.)

Continuation of MUS 4255. *Prereq.* MUS 4255.

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MUS 4301 Form and Analysis (3 q.h.)

The principles of unity and variety in musical composition. Representative works from all periods of Western music are used to analyze and study such single-member forms as theme and variation, rondo, minuet and trio, sonata-allegro, passacaglia, canon, and fugue. *Prereq.* MUS 4203 or equiv.

MUS 4810 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 q.p.a.

MUS 4811 Honors Program 2 (4 q.h.)

See MUS 4810.

MUS 4812 Honors Program 3 (4 q.h.)

See MUS 4810.

MUS 4815 Advanced Tutorial 1 (3 q.h.)

Opportunity to take an upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.

MUS 4816 Advanced Tutorial 2 (3 q.h.)

See MUS 4815.

MUS 4820 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

MUS 4821 Independent Study 2 (3 q.h.)

See MUS 4820.

MUS 4822 Independent Study 3 (3 q.h.)

See MUS 4820.

NURSING**NUR 4300 Nursing Transition** (9 q.h.)

The first nursing course for registered nurses in the bachelor's degree program, introducing program objectives and philosophy. Through guided and independent study, covers roles and role conflicts, communication, group dynamics, and the nursing process, specifically with patients experiencing the stresses of aging, chronic and long-term illness, and the presence of death. Also examines human nutritional needs, with emphasis on the aged and chronically ill. Registration by permission of the Academic Coordinator one full quarter in advance of registration. Open only to matriculated BSN students. *Prereq.* BIO 4104, BIO 4177, BIO 4190, CHM 4113, PSY 4112, and ENG 4112.

NUR 4301 Psychiatric/Mental Health Nursing (7 q.h.)

Development of knowledge of mental and emotional illness through a basic understanding of the dynamics of human behavior and

beginning skills in therapeutic intervention. Also introduces the concepts of family and group therapy and crisis intervention techniques. Registration by permission of the Academic Coordinator. *Prereq.* NUR 4300.

NUR 4302 Pharmacodynamics (3 q.h.)

Intended for registered nurses. Introduces pharmacologic principles, the pharmacotherapeutics of drug groups, and individual drug substances of particular importance in the treatment and diagnosis of disease.

Prereq. CHM 4113.

NUR 4303 Life Crisis Analysis and Response (4 q.h.)

This interdisciplinary course concerns personal, family and community crises identified from the literature health agency clientele and personal experiences. Concepts from nursing, sociology, anthropology and social psychology are used to assess the crises and develop strategies for dealing with them.

Special emphasis will be placed on approaches used by providers in human service systems to help people in crisis, ex: at times of death, divorce, job loss, illness, rape etc.

Prereq. SOC 4100, SOC 4101 or permission of instructor.

NUR 4400 Maternal and Child Nursing (9 q.h.)

Maintaining optimal health for child-bearing and child-rearing families from various cultural and social backgrounds. Students examine individuals at selected developmental stages. Provides opportunities to apply the nursing process in client-care settings and to assist families in coping with stresses that interfere with health. Registration by permission of the Academic Coordinator. *Prereq.* NUR 4300, NUR 4302, and PSY 4241.

NUR 4401 Medical-Surgical Nursing (9 q.h.)

Effects of acute illness on individuals, families, and society. Discusses alterations and adaptations in physiology characteristic of acute illness, the nurse's role, the impact of illness on living patterns, and the need for health education and continuity of care. Includes guided clinical experiences, emphasizing the nursing process and the development of skills necessary to care for the acutely ill adult. Registration by permission of the Academic Coordinator. *Prereq.* NUR 4300, NUR 4301, NUR 4302, and PSY 4241.

NUR 4402 Health Assessment (4 q.h.)

Additional theory and skills relevant to the clinical, decision-making role of the nurse as a primary caretaker, including history-taking and physical and psychosocial assessment. Emphasis is on how the analysis and syn-

thesis of data obtained from a holistic health assessment leads to the identification of common health abnormalities and enhances clinical decision-making skills. Limited enrollment.

NUR 4500 Community Health Nursing (9 q.h.)

Introduction to ways in which families, groups, and communities meet the health and welfare needs of their members, with particular attention to the nurse's role. Includes the political implications of health care delivery and current research affecting family and group health and community nursing. Laboratory experience involves work with individuals, families, and communities. Registration by permission of the Academic Coordinator. Open only to matriculated BSN students. *Prereq.* NUR 4300, NUR 4302, NUR 4400, NUR 4401, PSY 4242, and SOA 4102.

NUR 4501 Contemporary Nursing (5 q.h.)

Intended for seniors. Covers current trends and issues in nursing and health care delivery. Students define their objectives, pursue an area of nursing in which they are particularly interested, and evaluate their own performance. Synthesizes major concepts through lectures, seminars, and student participation. Registration by permission of the Academic Coordinator. Open only to matriculated BSN students. *Prereq.* NUR 4301, NUR 4400, NUR 4401, SOA 4102, and PSY 4242.

NUR 4502 Introduction to Nursing Research (4 q.h.)

Builds on prior exposure to selected nursing studies. Covers qualitative and quantitative research and the value of each to nursing and the health care field. Also discusses the importance of nursing to both practitioner and consumer. Open only to matriculated BSN students. *Prereq.* NUR 4300, NUR 4301, NUR 4302, NUR 4400, NUR 4401, SOA 4102, and PSY 4242.

PHYSICAL EDUCATION

PED 4200 Cardiovascular Health and Exercise

(1 cl., 3 lab., 3 q.h.)

Structured exercise program meeting three times per week and offering a choice of jogging, swimming, or aerobic exercise classes and a weekly cardiovascular health lecture. Participants receive two comprehensive cardiovascular medical and physical fitness evaluations, prior to and at the completion of the program. Includes a cardiopulmonary examination by a cardiologist, blood chemistry profile, pulmonary function testing, resting

EKG, graded exercise treadmill (stress) test with EKG and blood pressure evaluation, assessment of percent body fat (ideal weight and projected weight loss where applicable), and functional assessment of the lower back. Each participant receives a computerized report; individual exercise programs are based on test results. (Laboratory fee.)

PHILOSOPHY

PHL 4100 Philosophical Thinking (3 q.h.)

Methods and values of thinking philosophically. Reveals strategies of dialogue and of informational discovery through understanding and use of the Socratic method of intellectual exchange. Analyzes the universal quest for truth in order to distinguish between knowing and not knowing, dogma, and ignorance. Proves value issues through questions in ethics and moral philosophy.

PHL 4105 Philosophy of Knowing and Reality (3 q.h.)

The difference between knowledge and belief. Areas of theoretical focus include the nature of ultimate reality, the nature of human knowledge, and the nature and existence of God. The investigation of a variety of problems and alternative solutions helps students think independently and self critically. Emphasizes the development of discipline and precision in communicating ideas.

PHL 4110 Philosophy of Right and Justice (3 q.h.)

Ethics and social and political philosophy. In ethics, addresses the questions "What sorts of things are good or bad?" and "What actions are right or wrong?" In social and political philosophy, examines theories of human nature, social change, social institutions, and major twentieth-century political theories. Possible additional topics include aesthetics and philosophy of history.

PHL 4165 Moral Problems in Medicine (3 q.h.)

Social and moral problems created by medical science. Questions investigated include "Should a human life be prolonged under any condition and at any cost?" "What are the moral problems caused by the current medical definitions of death?" and "Is it morally right to predetermine the physical characteristics of future generations by genetic engineering?"

PHL 4170 The Human Search for Meaning (3 q.h.)

Examination of selected philosophical problems of human existence, such as freedom, death, sexuality, alienation, and becoming a person.

PHL 4180 Business Ethics (3 q.h.)

Ethical principles and considerations involved in making moral business decisions. Studies basic ethical viewpoints as a foundation; analyzes specific characteristics of business life through particular cases and examples.

PHL 4200 Logic (3 q.h.)

Essentials of lucid thinking in terms of basic logical concepts, including deductive and inductive reasoning, valid and invalid arguments, and the varied functions of language and definition. Also examines how to recognize and evaluate different kinds of arguments, methods of detecting and avoiding common errors in reasoning, and the link between structured thought and effective communication.

PHL 4220 The Meaning of Death (3 q.h.)

Various philosophical and religious views concerning the meaning of death. Discusses such questions as "What attitude should one take regarding one's own death?" "What role does death play in our personal relations to others?" and "Is it necessary to believe in an afterlife in order to give meaning to this life?"

PHL 4223 Philosophy of Consciousness (3 q.h.)

Theories of consciousness, the possibility of higher states of consciousness, and some techniques, such as meditation, alleged to lead to higher states of consciousness. Readings may include psychological and parapsychological literature on the subject.

PHL 4230 Ethics in Theory and Practice (formerly Ethics 1) (3 q.h.)

Major ethical theories, emphasizing ethical naturalism, utilitarianism, moral sense theories, intuitionism, and theological theories. Applications of these theories are discussed and compared.

PHL 4231 Current Topics in Ethics (formerly Ethics 2) (3 q.h.)

Problems and issues encountered in important areas of moral concern, such as euthanasia, punishment, professional conduct, and moral responsibility in general. Explains various approaches to these problems within the framework of major ethical theories.

PHL 4235 Personal Ethics (3 q.h.)

As we live our lives, we face many decisions about the "rightness" or "wrongness" of our ideas and actions. Explores two different approaches to moral dilemmas: utilitarian theory, which defines the good as the best

possible outcome, and deontological theory, which states that actions themselves are either good or evil. Applies these ethical theories to the moral choices we make on issues such as abortion, the AIDS epidemic, capital punishment, nuclear arms, and taxation.

PHL 4243 Existentialism (3 q.h.)

Existential philosophy as understood through study of its greatest representatives, such as Kierkegaard, Nietzsche, Dostoyevsky, Heidegger, Jaspers, Camus, Sartre, and Merleau-Ponty. Focuses on the central themes of self-alienation, authenticity, and existential experiences.

PHL 4245 Philosophy of Religion (3 q.h.)

The arguments for the existence of God. Covers natural and moral evil, the soul, immortality, the evidence for miracles, and the nature of religious knowledge.

PHL 4247 Theistic, Atheistic, and Agnostic Philosophies (3 q.h.)

Selected theistic, atheistic, and agnostic philosophies. Questions studied include: "Is the belief in God necessary for a comprehensive philosophy of life?" "How does an atheistic philosophy explain and justify the 'higher values' such as love, beauty, and justice?" and "How is it possible to base a philosophy on the principle of agnosticism?"

PHL 4249 Women's Spirituality (formerly Feminist Spirituality) (3 q.h.)

Women's religious experience as described in classical and contemporary sources. Readings include such works as *Womanspirit Rising*, *The Politics of Women's Spirituality*, and *Dreaming the Dark*.

PHL 4250 Philosophy of Human Nature (3 q.h.)

Philosophical and literary study of human nature. Questions include "What is human nature?" and "What is a human being?" Examines some of the philosophical answers to these questions, with special attention to the significance of tradition, social role, freedom, and decision.

PHL 4251 Images of Women in Philosophy (3 q.h.)

Philosophical approach to the study of women in society. Drawing from sources within the history of philosophy and literature, includes the role (ideal and actual) of women in society, love and marriage, oppression and isolation, and the cult of virginity.

PHL 4252 Women's Ethical Issues (3 q.h.)

The emerging feminist ethos as distinct from traditional descriptions of feminist morals and values. Discusses questions of politics, power, values, and actions. Readings include such works as De Beauvoir's *The Ethics of Ambiguity* and Daly's *Gyn-Ecology*.

PHL 4255 Women and Religion (3 q.h.)

The role and place of women in the major religions of the world and contemporary feminist challenges to these traditional understandings. Readings include such works as Carmody's *Women and Religion* and Daly's *Beyond God the Father*.

PHL 4256 Introduction to Feminist Thought (3 q.h.)

Introduction to feminist scholarship in various fields. Explore what constitutes knowledge when women's experiences rather than men's, frame the questions, provide the data, and interpret that data.

PHL 4265 Contemporary Religious Issues in America (formerly Understanding Religion in America Today) (3 q.h.)

Study America's remarkable religious pluralism. Includes contemporary Christianity and Judaism, nontraditional Christian and non-Christian movements, cults, sects, and quasireligious organizations. After becoming familiar with American religious foundations, students study the connections between religion and sociotechnological change, sex, biomedical ethics, politics, and the media. May include guest speakers.

PHL 4266 The Religious Right in Contemporary America (3 q.h.)

Evangelism, fundamentalism, extremist groups, and nontraditional Jewish and Christian movements. Also examines "priesthood of all believers," grace and the idea of the "elect," and the state of being "born again" as well as the New Deal, the Great Society, and the "conservative revolution." Includes background on the roots of these movements, from precolonial Europe and Puritan America to the development of the Social Gospel. May include guest speakers.

PHL 4270 The Great Western Religions (3 q.h.)

Study of the basic teachings of Judaism, Christianity, and Islam.

PHL 4273 Judaism (3 q.h.)

Philosophy of the Jewish religion, its metaphysical and ethical beliefs, and the philosophical origins of these beliefs.

PHL 4275 The Great Eastern Religions (3 q.h.)

Study of the basic teachings of Taoism, Confucianism, Buddhism, Hinduism, and Shintoism.

PHL 4277 Hinduism (3 q.h.)

The Hinduism of the *Upanishads*, the most explicit of the mystical religions. Also includes the devotional aspect of Hinduism as expressed in the *Bhagavad Gita*.

PHL 4279 Buddhism (3 q.h.)

Central teachings of Buddhism, including the doctrines that there is no independently existing immutable self or soul, that all phenomena are impermanent, that existence is suffering, that suffering has a cause, and that there is a way to eliminate suffering.

PHL 4280 Islam (3 q.h.)

History of Islam, its conflicts with the West in the past and in the present, Islamic beliefs, and the future of Islam as a world religion.

PHL 4293 Mysticism: East and West (3 q.h.)

Inquiry into mystical experience through a comparative study of the writings of Christian, Buddhist, and Hindu mystics and of secondary interpretive sources. Explores the potential oneness of humanity with God, the conflict of mysticism with traditional forms of religion, and the possibility of a common, cross-cultural basis for mysticism.

PHL 4315 Understanding the Bible: The Old Testament (3 q.h.)

Exploration of the traditions of the Hebrew people in cultural and historical perspective. Topics to be considered include changing ideas of the nature of God, the roles of prophet, priest, and king, and the development of the covenant motif.

PHL 4316 Understanding the Bible: The New Testament (3 q.h.)

Christianity began as a reform movement within Judaism but soon became a unique religious tradition. Examines earliest Christianity in its cultural and historical setting focusing on the Gospel portraits of Jesus, the Kingdom of God, theories of afterlife, and Pauline theology.

PHL 4330 The Encounter of Psychology and Religion (3 q.h.)

Exploration of the ways the sense of self shapes and is shaped by religion. Emphasis on dominant Western psychologies and religions. Examination of the role of religious values in defining cultural values, and of these values in determining a sense of self.

PHL 5220 The Meaning of Death (3 CEUs)

Same as PHL 4220.

PHYSICS**PHY 4101 College Physics 1* (4 q.h.)**

Introduction to mechanics, including units of measurement, vectors, accelerated motion, and Newton's laws of motion. Further topics include conservation of energy, work, momentum and introduction to elements of heat, mechanical waves and vibrating bodies. Laboratory experiments and classroom demonstrations are an integral component of this course. (This course is intended for the Health Professions and Science Programs and cannot be utilized for credit towards technology degrees in the School of Engineering Technology).

PHY 4102 College Physics 2* (4 q.h.)

Introduction to magnetism, magnetic fields, electromagnetic induction, electrostatics and electric circuits. Further areas covered include appropriate topics in optics, nuclear and atomic physics. Laboratory experiments and classroom demonstrations are an integral component of this course. (This course is intended for the Health Professions and Science Programs and cannot be utilized for credit towards technology degrees in the School of Engineering Technology). *Prereq.* PHY 4101.

PHY 4117 Physics 1* (4 CH, 4 q.h.)

Topics include vectors and balanced forces, accelerated motion, Newton's laws, projectile motion, work and energy, momentum, angular motion, centripetal force, rotation of rigid bodies, and moment of inertia. *Prereq.* MTH 4107 or MTH 4107 must be taken concurrently.

PHY 4118 Physics 2* (4 q.h.)

Topics include elasticity, density and pressure, temperature, the gas laws, heat transfer, thermodynamics, vibratory motion, wave motion, properties of sound, and properties of light. *Prereq.* PHY 4117.

PHY 4119 Physics 3* (4 q.h.)

Studies electrostatics, circuit elements, direct current circuits, magnetism, electromechanical devices, alternating current circuits, electronics, and electromagnetic waves. *Prereq.* PHY 4118.

PHY 4173 Physics Laboratory 1* (2.3 lab, 2 q.h.)

Offers experiments in mechanics, elastic deformation, work, energy, thermometry, and calorimetry. *Prereq.* PHY 4117.

*This is a School of Engineering Technology course, which is offered at a different tuition rate than that of

PHY 4174 Physics Laboratory 2* (2.3 lab, 2 q.h.)
Continues PHY 4173. Offers experiments in gas laws, wave motion, optics, electrical circuits, and nuclear and atomic physics. *Prereq.* PHY 4173.

POLITICAL SCIENCE

POL 4103 Introduction to Politics (3 q.h.)
Introduction to contemporary political science, including consideration of basic concepts in political analysis, the role of government institutions, political representation, political ideologies, and the scope and methods of political science.

POL 4104 Introduction to American Government (3 q.h.)
American governmental and political processes, constitutional institutions, political behavior, and liberties.

POL 4105 Introduction to Comparative Politics (3 q.h.)
Comparative study of constitutional and totalitarian systems, including the Western European and Soviet patterns.

POL 4106 Introduction to Politics (4 q.h.)
Basic political concepts and forces of organization from the classical Greeks to the modern nation-state. The Soviet Union and the United Kingdom are contrasted as contemporary illustrations of the institutional distinction between a totalitarian and a constitutional system. *For Alternative Freshmen-Year Students only.*

POL 4110 The Great Political Thinkers (3 q.h.)
Explore the great political thinkers from ancient Greece to the twentieth century. Probes the creative genius of such theorists as Plato, Aristotle, Aquinas, Hobbes, Hegel, Locke, Rousseau, Mill, and Marx.

POL 4300 Introduction to Public Administration (formerly Public Administration 1) (3 q.h.)
Introduction to the theory, forms, and processes of administration at the national and state levels.

POL 4301 Case Studies in Public Administration 2 (formerly Public Administration 2) (3 q.h.)
Case-study examination of the relationship between the theory and practice of public administration. *Prereq.* POL 4300 or equiv.

POL 4302 Public Administration (Intensive) (6 q.h.)
Same as POL 4300 and POL 4301.

POL 4303 Public Personnel Administration (3 q.h.)
Study basic elements of personnel administration, including recruitment, training, classification, promotion, and executive development. Pays special attention to current problems,

such as equal opportunity, public employee unionism, and collective bargaining.

POL 4304 Public Budgeting (3 q.h.)
Politics, procedures, and goals of government budgeting at the federal, state, and local levels are covered. Includes expense, capital, and program budgeting.

POL 4305 Organizational Theory (3 q.h.)
Examines people and organizations, focusing on organizational and societal problems as a way of understanding how we can survive in a bureaucratic system.

POL 4306 Public Policy Analysis (3 q.h.)
Procedures for the analysis of public policy are studied, including discussion of selected cases of public policy at the local, state, or federal level.

POL 4307 The Politics of Health (3 q.h.)
Explore the problems of health in developing countries, particularly during the last decade. Examines the political dynamics at the village, national, and global levels that have hindered efforts to establish health care delivery systems. Analyzes issues of nationalism and problems of refugees.

POL 4310 American Political Thought (3 q.h.)
Topics include political thought from the Colonial period to the present, including study of the impact of religious, economic, and judicial theories on the structure of American ideas.

POL 4311 Research Methods (3 q.h.)
Introduction to some of the most common methods of conducting political science research. Includes problems of theory construction and data gathering and such analytical research tools as bibliographical aids and the computer.

POL 4312 Political Parties and Pressure Groups (3 q.h.)
Discuss party government in the United States and Great Britain, focusing on the interaction of party and government.

POL 4313 State and Local Government (formerly Government and Politics and the States) (3 q.h.)

State and local governments, their problems, and functional and operational responses to these problems are examined.

POL 4314 Urban and Metropolitan Government (3 q.h.)
Explore political, structural, and functional problems of an urbanizing United States. Includes an analysis of urban, suburban, and metropolitan governments.

*This is a School of Engineering Technology course, which is offered at a different tuition rate than that of University College.

POL 4318 The American Presidency (3 q.h.)

Study the nation's chief executive. Includes topics such as the presidential electoral process, the president's many constituencies, and the differing styles of twentieth-century presidents. Also covers constitutional and extraconstitutional powers of the office.

POL 4319 The Congress (3 q.h.)

Institutional and functional analysis of the roles of Congress are examined, as well as the chief executive and political parties in the legislative process.

POL 4320 American Constitutional Law (3 q.h.)

A case analysis of the development of Federalism, the separation of powers, and the role of the federal and state courts in constitutional development.

POL 4321 Civil Liberties (formerly Civil Rights) (3 q.h.)

Examination of quality and content of civil liberties in the United States. Emphasizes the First, Fifth, Sixth, Fourteenth, and Fifteenth amendments to the Constitution.

POL 4322 Procedural Due Process (3 q.h.)

Study of due process in the American constitutional scheme.

POL 4325 The Politics of Films (3 q.h.)

The relationship between films and politics is explored. Films are analyzed for their political content and impact on specific controversies and on politics and society as a whole.

POL 4327 Sex Roles in American Politics (3 q.h.)

Topics such as the roles of women in American government and politics, including the traditional roles—or absence thereof—of women in American politics, the suffrage movement, the impact of sex on achieving political power and office, the growing importance of the women's vote, the women's movement, and political action to support women's issues are covered.

POL 4330 Comparative Politics (3 q.h.)

Discuss political culture, organization, and behavior in different national settings.

POL 4331 International Relations (3 q.h.)

Study elements of and limitations on national power. Discusses contemporary world politics, problems of war, and peaceful coexistence.

POL 4332 International Organization (3 q.h.)

The development of international organizations, emphasizing the United Nations, specialized agencies, and regional organizations is explored.

POL 4333 International Law (3 q.h.)

Examine the procedural and substantive study of the legal relations among nation-states.

POL 4335 Formulating American Foreign Policy (3 q.h.)

The Constitution and political instruments for the formulation of American foreign policy are discussed.

POL 4336 American Foreign Policy (3 q.h.)

Study of recent and current American foreign affairs.

POL 4337 The Politics of Arms Control (3 q.h.)

Discuss the nuclear arms rivalry between the United States and the Soviet Union, along with opportunities for curtailing it through arms control. Includes the nature and purposes of nuclear weapons, past arms-control agreements, and recent breakthroughs. Explores current options for arms control.

POL 4338 European Political Parties (3 q.h.)

Emphasizes political party systems in England, France, and Germany, and their ideology, organization in and out of Parliament, electoral strategies, and voter behavior.

POL 4339 Government and Politics in the Soviet Union (3 q.h.)

Explore modern totalitarian theory and practice, follow up with studies of the ideological and historical bases of the Soviet dictatorship.

POL 4341 Soviet Foreign Policy (3 q.h.)

Discussion of the evolution of Soviet foreign policy since 1917, emphasizing the development of the international Communist movement.

POL 4342 Communism in Eastern Europe (3 q.h.)

Study the conditions and circumstances surrounding the establishment of Communist regimes in eastern Europe following World War II and their relations with the Soviet Union.

POL 4350 Politics and Policies of the Developing Nations (3 q.h.)

Covers colonialism, the struggles for independence, and the common problems of developing nations. Includes economic development, urbanization, cultural fragmentation, and revolution.

POL 4352 Government and Politics of Latin America (3 q.h.)

Explore the historical background of the Latin American nations and their cultural, economic, social, and political characteristics, including political violence and the breakdown of democratic governments.

POL 4356 Government and Politics of Northern Africa (3 q.h.)

A comparative analysis of political culture, organization, and behavior of African states north of the Sahara, with emphasis on Morocco, Algeria, Tunisia, and Egypt.

POL 4357 Government and Politics of South Africa (3 q.h.)

An analysis of political culture, organization, and behavior of South Africa. Examines the South African history to show how South Africa got where it is today, including the nature, implications, and problems of apartheid, and prospects for the future.

POL 4359 Government and Politics in the Middle East (3 q.h.)

Political change, economic growth, and social adaptation in selected countries is discussed. The emergence of the Middle East from subjection to self-assertion is examined, focusing on such topics as the influence of Western Modernism, Muslim fundamentalism, inter-Arab rivalries, Arab-Israeli conflict, and the civil strife in Lebanon.

POL 4362 Government and Politics of Southeast Asia (3 q.h.)

Topics such as political instability and problems of establishing democratic structures and processes in the Philippines, Thailand, and India are explored.

POL 4364 China's Foreign Policy (3 q.h.)

Examine Beijing's relations with Africa, the rest of Asia, the Soviet orbit, and the West. Covers policy objectives, strategy, tactics, and the methods of decision making in both the party and state apparatus.

POL 4365 Government and Politics of China (3 q.h.)

Discuss Chinese political culture, emphasizing the nineteenth-century cultural, economic, and political impact of the West, the emergence of the Communist party under the leadership of Mao Tse-Dung, and the progressive disintegration of Kuomintang leadership.

POL 4367 Government and Politics of Japan (3 q.h.)

Examine the historical development of the Japanese nation, with particular attention to the growth of fascism and efforts to create a viable democracy since World War II.

POL 4370 Introduction to Political Theory (3 q.h.)

Development of the political ideas of the Western world, including the ideas of the major philosophers of Greece, Rome, the Christian Era, and the Renaissance is discussed.

POL 4371 Modern Political Theory (3 q.h.)

Exploration of political ideas and systems of political thought from Machiavelli to the present. *Prereq.* POL 4370 or *equiv.*

POL 4372 Contemporary Political Thought (3 q.h.)

Analyzes current ideas, ideologies, and political movements. Examination of such topics as neo-conservatism, neoliberalism, neo-Marxism, and women's liberation.

POL 4373 Islamic Political Thought (3 q.h.)

Introduction to Islamic thought and political theory. Analyzes such classical theorists as Avicenna, Averroes, Al-Ghazali, and Ibn Khaldun, and such modern theorists as Abduh, Iqbal, and Shari'ath.

POL 4375 Consumer Advocacy 1 (3 q.h.)

A pragmatic course, designed to define and expand the role of consumers in the marketplace. Focuses on contemporary consumer issues, touching upon the legal, social, economic, and political aspects of consumer problems and the role of consumer lobbies as special interest groups. More specific consumer problems, such as those of the elderly, may also be explored.

POL 4376 Consumer Advocacy 2 (3 q.h.)

Continuation of POL 4375. *Prereq.* POL 4375 or *equiv.*

POL 4377 Consumer Advocacy 3 (3 q.h.)

Continuation of POL 4376. *Prereq.* POL 4376 or *equiv.*

POL 4378 Current Political Issues (3 q.h.)

Explore the constitutional and political basis of selected problems in American political life.

POL 4815 Advanced Tutorial 1 (3 q.h.)

Opportunity to take an upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.

POL 4816 Advanced Tutorial 2 (3 q.h.)

See POL 4815.

POL 4820 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

POL 4821 Independent Study 2 (3 q.h.)

See POL 4820.

POL 4822 Independent Study 3 (3 q.h.)

See POL 4820.

POL 4830 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 q.p.a.

POL 4831 Honors Program 2 (4 q.h.)

See POL 4830.

POL 4832 Honors Program 3 (4 q.h.)

See POL 4830.

POL 5375 Consumer Advocacy 1 (3 CEUs)

Same as POL 4375.

PSYCHOLOGY

PSY 4110 Introduction to Psychology: Fundamental Issues (formerly Fundamental Issues in Psychology) (3 q.h.)

Explore fundamental principles and issues of contemporary scientific psychology, which are approached as a method of inquiry as well as a body of knowledge. Examines the origins and methods of psychology, biological foundations of behavior, states of consciousness, learning, and memory.

PSY 4111 Introduction to Psychology: Developmental Aspects (formerly Developmental Aspects in Psychology) (3 q.h.)

Covers growth and the life-cycle, language, mental abilities, sensory and perceptual processes, and social interaction. *Prereq.* PSY 4110 or *equiv.*

PSY 4112 Introduction to Psychology: Personal Dynamics (formerly Personal Dynamics in Psychology) (3 q.h.)

Examines motivation, emotion, personality theory and measurement, abnormal psychology, and therapy. *Prereq.* PSY 4110 or *equiv.*

PSY 4113 Introduction to Psychology Intensive A (formerly Psychology Intensive) (9 q.h.)

Same as PSY 4110, PSY 4111, and PSY 4112.

PSY 4114 Introduction to Psychology Intensive B (6 q.h.)

Same as PSY 4110 and PSY 4111.

PSY 4220 Statistics in Psychology 1 (3 q.h.)

Scales of measurement in psychological research, measures of central tendency, and variability are discussed. *Prereq.* PSY 4111 and PSY 4112 or *equiv.*

PSY 4221 Statistics in Psychology 2 (3 q.h.)

Introduction to measures of correlation, probability, and statistical distributions. *Prereq.* PSY 4220 or *equiv.*

PSY 4222 Statistics in Psychology 3 (3 q.h.)

Explores parametric and nonparametric tests of significance, including chi square, t-test, F test, and simple analysis of variance. *Prereq.* PSY 4221.

PSY 4231 Psychology of Learning 1 (3 q.h.)

Study the basic principles and techniques of operant and Pavlovian conditioning and their

applications to therapeutic, educational, and specialized training programs. *Prereq.* PSY 4111 or PSY 4112 or *equiv.*

PSY 4232 Motivation (3 q.h.)

Topics include various aspects of motivation, including primary and secondary reinforcement, unconscious motivation, effectuate motivation, and the assessment of motives. *Prereq.* PSY 4112 or *equiv.*

PSY 4240 Development: Infancy and Childhood

(formerly Developmental Psychology: Infancy and Childhood) (3 q.h.)

Human development from infancy through late childhood is explored. Covers physical, cognitive, and psychosocial development, including the development of language, morality, and interpersonal relationships.

PSY 4241 Development: Adolescence (formerly Developmental Psychology: Adolescence) (3 q.h.)

Examines development during the second decade of life, emphasizing the tasks and problems confronting the individual adolescent. Includes topics such as biological, social, and cognitive changes as they relate to the creation of a stable, individual identity.

PSY 4242 Development: Adulthood and Aging

(formerly Developmental Psychology: Adulthood and Old Age) (3 q.h.)

Discuss the unique features and problems of development from the adult years to death. Emphasizes changes that accompany career, marriage, and family developments and the specific psychological adjustments required of the aging person.

PSY 4243 Aging and Mental Health (3 q.h.)

Emotional reactions to age-related issues, such as retirement, bereavement, and health status are covered. Discusses depression and suicide, behavior disorders, substance use problems, and the dementias of old age and the effects these problems have on families and the community. Includes a survey of special assessment techniques, mental health services for the elderly, and public health policies for improved care.

PSY 4262 Memory and Thinking (3 q.h.) (formerly Cognitive Psychology)

Explores the mental processes involved in the acquisition, organization, and use of knowledge, including pattern recognition and memory. *Prereq.* PSY 4111, PSY 4112, or *equiv.*

PSY 4263 Psycholinguistics (3 q.h.)

Topics such as the nature and structure of language, various theories of human production and perception of language, and related experimental findings are covered. *Prereq.* PSY 4111 or equiv.

PSY 4270 Social Psychology 1 (3 q.h.)

Study the socialization process, social motives, interpersonal perception, and group membership and structure. *Prereq.* PSY 4111 or equiv.

PSY 4271 Social Psychology 2 (3 q.h.)

Topics include attitudes, prejudice and ethnic relations, leadership, mass behavior and social movements, and the effects of mass media on communication. *Prereq.* PSY 4270 or equiv.

PSY 4272 Personality 1 (3 q.h.)

The normal personality and its growth and development is studied. Includes concepts such as environmental and genetic contributions, assessment of personality, research, and a survey of the major personality theories. *Prereq.* PSY 4112 or equiv.

PSY 4275 Group Processes (3 q.h.)

An analysis of group structure and its effect on behavior. Topics include leadership, communication, conflict resolution, and group problem-solving. Student participation used to illustrate and develop group-related concepts.

PSY 4276 Stress and Its Management (3 q.h.)

An analysis of stress and its effects on human behavior. Considers the causes of stress from a variety of theoretical perspectives. Techniques and procedures for stress management and reduction examined in detail.

PSY 4280 Human Sexuality and Love (3 q.h.)

An examination, both theoretical and experimental, of psychological, biological, and social aspects of sexuality and loving. Topics include sexual anatomy and physiology; birth control; gender identity and gender role; romantic love (with emphasis on successful love relationships); diverse sexual lifestyles; sexual dysfunctions and therapy; and enhancement of one's own sexual awareness and pleasure and that of one's partner.

PSY 4290 Psychology of Women (3 q.h.)

Examination of women, historically and in contemporary life, including their social roles and their behavior as determined genetically, physiologically, and psychologically. Includes discussion on the implications for women's future lifestyles, roles, and contributions. *Prereq.* PSY 4111 or PSY 4112 or equiv.

PSY 4351 Physiological Psychology 1 (3 q.h.)

Introduction to how nerves function and work together in the nervous system; how our sense organs provide the brain with information about the outside world; how the brain acts to produce behavior; and how such psychological concepts as perception, learning, motivation, arousal, and emotion may relate to nervous system activity. *Prereq.* PSY 4111 or PSY 4112 or equiv.

PSY 4352 Drugs and Behavior (3 q.h.)

Application of quantitative behavior techniques in animals and humans to determine the behavioral effects of pharmacological agents. Includes systematic survey of experimental literature. *Prereq.* PSY 4111 or PSY 4112 or equiv.

PSY 4370 Impact of Psychology on Society (3 q.h.)

Topics include developments such as the uses of intelligence and aptitude tests, psychosurgery and electroconvulsive therapy, techniques of behavior modification and control, minority and women's rights movements, direct brain stimulation by implanted electrodes, use of psychoactive drugs, use of the lie detector, and the application of experimental techniques to human beings. *Prereq.* PSY 4111 or equiv.

PSY 4372 Abnormal Psychology 1 (3 q.h.)

Introduction to the etiology and dynamics of the abnormal personality. *Prereq.* PSY 4112 or equiv.

PSY 4373 Abnormal Psychology 2 (3 q.h.)

Symptomatology and treatment of the neuroses and psychoses. *Prereq.* 4372 or equiv.

PSY 4374 Abnormal Psychology 3 (3 q.h.)

Explores psychosomatic, psychopathic, and organic disorders; varieties of psychotherapy. *Prereq.* PSY 4373 or equiv.

PSY 4381 Sensation and Perception 1 (3 q.h.)

Introduction to the nature of the perceptual world, the nature of object recognition and identification, spatial organization, contextual effects, learning and perception, and the influence of attitudinal, motivational, and personality factors on perception. *Prereq.* PSY 4111 or equiv.

PSY 4390 Industrial Psychology 1 (3 q.h.)

Examines psychology as applied to industry, including such topics as selection and placement procedures, employee assessment, individual differences and their evaluation, and the place of psychological tests in industry. *Prereq.* PSY 4111 or PSY 4112 or equiv.

PSY 4391 Industrial Psychology 2 (3 q.h.)

Covers personnel training and development, motivation and work, attitudes and job satisfaction, engineering psychology, and human factors in accident causation. *Prereq.* PSY 4390 or equiv.

PSY 4392 Industrial Psychology 3 (3 q.h.)

Discusses supervision and leadership, morale, personnel counseling, the psychology of labor-management relations, human relations, and organizational behavior. *Prereq.* PSY 4391.

PSY 4471 Psychological Therapies (3 q.h.)

Studies techniques used for treating deviant behavior, from classical psychoanalytical therapies through methods of behavior modification. *Prereq.* PSY 4374 or equiv.

PSY 4561 Experimental Psychology 1 (3 q.h.)

Students conduct experiments focusing on the scientific method in the design, execution, analysis, and reporting of psychological investigations. *Prereq.* PSY 4222.

PSY 4562 Experimental Psychology 2 (3 q.h.)

Continuation of PSY 4561. *Prereq.* PSY 4561.

PSY 4611 Senior Seminar in Psychology (3 q.h.)

Small groups of students meet to discuss topics of mutual interest in psychology. Each seminar has a different focus, depending upon the student group and the instructor. *Prereq.* Senior status or instructor's permission.

PSY 4813 Field Work in Psychology (6 q.h.)

Designed to enhance career development by allowing students to earn credit for the application of their academic backgrounds to practical problems in the work place. See page 16 for details.

PSY 4815 Advanced Tutorial 1 (3 q.h.)

Opportunity to take an upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.

PSY 4816 Advanced Tutorial 2 (3 q.h.)

See PSY 4815.

PSY 4820 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

PSY 4821 Independent Study 2 (3 q.h.)

See PSY 4820.

PSY 4822 Independent Study 3 (3 q.h.)

See PSY 4820.

PSY 4891 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 q.p.a.

PSY 4892 Honors Program 2 (4 q.h.)

See PSY 4891.

PSY 4893 Honors Program 3 (4 q.h.)

See PSY 4891.

PSY 5242 Development: Adulthood and Aging

(3 CEUs)

Same as PSY 4242.

PSY 5243 Aging and Mental Health (3 CEUs)

Same as PSY 4243.

PURCHASING**PUR 4351 Purchasing 1** (3 q.h.)

Introduction to the function of purchasing in the industrial organization. Includes purchasing responsibilities, objectives, organization, and personnel requirements; purchasing policy and systems; the role of the computer in regulating purchasing planning, transactions, and information retrieval; acquisition of purchased materials, development of sources of supply, and quality assurance; and determination and maintenance of required inventory levels. Also covers control of inventory investment, price determination, cost and price analysis of purchase transactions, make or buy decisions, and the role of standardization and value analysis.

PUR 4352 Purchasing 2 (3 q.h.)

The process of purchase negotiations, budgets, and purchase of capital equipment is examined. Includes purchasing for public and non-profit institutions, disposition of surplus and obsolete materials, traffic and material handling, forward buying and speculation, ethical considerations in purchasing, purchasing law, contract cancellations, purchasing reports, evaluation of purchasing performance, and control and audit procedures. *Prereq.* PUR 4351.

PUR 4353 Purchasing (Intensive) (6 q.h.)

Same as PUR 4351 and PUR 4352.

PUR 4357 Business Negotiations (3 q.h.)

Explores buyer-seller communication and exchange. Includes the interactive process for arriving at a satisfactory agreement between buyer and prospective vendor and accepted strategies employed by both parties. Discusses economic and technical considerations and the psychological and interpersonal environments of negotiations. *Prereq.* PUR 4351.

PUR 4358 Materials Requirements Planning (3 q.h.)

Includes determination of material requirements based on the master production schedule; as well as calculation of the time periods in which materials must be available. The computer-based MRP system may be used as preparation for APICS certification exams.

PUR 4365 Production Activity Control (3 q.h.)

Topics include principles, approaches, and techniques used to plan, schedule, control, and evaluate the effectiveness of factory production operations. Examines scheduling and control techniques used in various manufacturing environments. Course may be used as preparation for APICS Certification examinations.

PUR 4370 Inventory Management (3 q.h.)

Explores basic inventory management objectives, from the control of raw materials to finished goods and distribution inventory management. Includes aggregate inventory controls, lot sizing, customer service objectives, and the financial and physical controls necessary for effective inventory management. Course may be used as preparation for APICS Certification examinations.

PUR 4390 Just-In-Time Manufacturing (JIT) (3 q.h.)

Just-In-Time manufacturing is a natural evolution of traditional practices which strives towards increasing through-puts, decreasing inventory investments, decreasing operating expenses, improving quality, etc. This course has been developed to introduce the student to the philosophies, principles, concepts, and techniques of Just-In-Time purchasing and manufacturing. Emphasis on the differences between traditional and J.I.T. manufacturing will be discussed in detail. This course will also help the student to prepare for the APICS Just-In-Time certification examination.

PUR 4395 Master Production Scheduling (MPS) (3 q.h.)

This course is divided into two sections: Forecasting and Master Production Scheduling. The Forecasting Section develops the concept of Forecasting; qualitative, intrinsic and extrinsic techniques, Forecast source data, Forecast accuracy, statistics, the relation of Forecasting to other processes and Management Considerations. The Master Production Scheduling Section develops the concepts of Master Scheduling Planning and Control, development and utilization of a Master Production Scheduler. Finally, the course discusses the link between Forecasting, the Master Production Schedule and Customer Orders. This course can be used for preparation for the APICS certification examination.

PUR 4600 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 q.p.a.

PUR 4601 Honors Program 2 (4 q.h.)

See PUR 4600.

PUR 4602 Honors Program 3 (4 q.h.)

See PUR 4600.

PUR 4701 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

PUR 4702 Independent Study 2 (3 q.h.)

See PUR 4701.

PUR 4703 Independent Study 3 (3 q.h.)

See PUR 4701.

PUR 4800 Advanced Tutorial 1 (3 q.h.)

Opportunity to take upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.

PUR 4801 Advanced Tutorial 2 (3 q.h.)

See PUR 4800.

PUR 4900 Fieldwork (6 q.h.)

Opportunity to enhance career development by applying academic background to practical problems in the workplace. See page 16 for details. *Prereq.* Approval of Program Director.

RADIOLOGIC TECHNOLOGY**RAD 4100 Radiologic Technology Orientation 1** (3 q.h.)

Examines history of X-radiation, radiology department organization, medical terminology, patient care and nursing procedures, and contrast media.

RAD 4101 Radiologic Technology Orientation 2 (3 q.h.)

Study of medical and surgical diseases. *Prereq.* RAD 4100.

RAD 4102 Radiologic Science 1 (4 q.h.)

Basic concepts of physics, units of measurement, Newton's law of motion, work, energy, atomic theory of matter, electric currents, magnetism, generators, motor production, control of high voltage, and X-ray production are covered. *Prereq.* MTH 4110.

RAD 4103 Radiologic Science 2 (4 q.h.)

Topics include interaction of X-rays and matter; modern X-ray tubes; X-ray circuits; simulator experiments; fluoroscopic systems; and properties of solids, liquids, and gases. Also covers temperature and heat transfer and their application. *Prereq.* RAD 4102.

RAD 4104 Principles of Radiology 1 (4 q.h.)

Practical, basic radiation protection and the principles of positioning patients for radiographic studies are covered. *Prereq.* RAD 4114.

RAD 4105 Principles of Radiology 2 (4 q.h.)

Explores principles of precise body positioning for detailed radiographic studies. *Prereq.* RAD 4104.

RAD 4106 Radiologic Photography and Exposure 1 (4 q.h.)

Emphasizes basic principles of image formation, electromagnetic spectrum, X-ray tube construction, and factors controlling radiographic quality. *Prereq.* RAD 4103 and MTH 4110 or equiv.

RAD 4107 Radiologic Photography and Exposure 2 (4 q.h.)

Examines mathematical formulas used in radiography. Includes in-depth study of sensitometry, phototiming principles, tomography, and radiographic film techniques. *Prereq.* RAD 4102 and RAD 4106.

RAD 4116 Radiology Practicum 1 (4 q.h.)

Students apply theoretical principles by performing radiographic procedures under supervision in a direct patient care setting. Requires four hours of classroom education and assigned homework. Emphasizes patient safety, radiation protection, and basic, routine diagnostic procedures.

RAD 4117 Radiology Practicum 2 (4 q.h.)

Continuation of RAD 4116. Emphasizes routine diagnostic procedures, including fluoroscopy, operating room and portable radiography. *Prereq.* RAD 4116.

RAD 4118 Radiology Practicum 3 (4 q.h.)

Continuation of RAD 4117. Emphasizes advanced diagnostic procedures, including invasive and interventional studies. Minor rotations are scheduled for related imaging departments. *Prereq.* RAD 4117.

RAD 4119 Radiology Practicum 4 (4 q.h.)

Continuation of RAD 4118. Final clinical practicum leads to demonstration of accomplishment of terminal clinical competencies. *Prereq.* RAD 4118.

RAD 4121 Principles of Photography and Exposure Lab 1 (1 q.h.)

Energized x-ray laboratory activities designed to complement RAD 4106.

RAD 4122 Principles of Photography and Exposure Lab 2 (1 q.h.)

Continuation of RAD 4121. Designed to complement RAD 4107.

RAD 4304 Cross-Sectional Anatomy (4 q.h.)

Introduces regional approach to anatomy. Reviews standard anatomy, with emphasis on relations of organs and structures to transverse and longitudinal section appearance.

RAD 4305 Advanced Radiologic Technology (4 q.h.)

Special procedures including cardiovascular procedures, neuroradiology, lymphangiography, and intervention studies are explored. Exam methodology, required equipment, special patient care, contrast media, and contra indications are also covered. *Prereq.* RAD 4103, RAD 4105, RAD 4107.

RAD 4306 Radiation Protection--Radiobiology (4 q.h.)

Topics include atomic structure, properties of radioactive materials, units of radiation, long- and short-term biological effects, life span shortening, radiation detection and survey instruments, radiographic facilities design, reduction of exposure to patients, federal x-ray standards, and radiopharmaceuticals. *Prereq.* RAD 4107.

RAD 4400 Anatomy of the Head and Neck (3 q.h.)

Explores anatomy of the head and neck in regional approach. Both standard and sectional anatomy are presented. Topics include brain, orbits, nasal cavity and paranasal sinuses, oral cavity and pharynx, larynx, thyroid and salivary glands, and angiology of head and neck.

RAD 4450 Computerized Body Tomography Pathology (3 q.h.)

Studies abnormal anatomy of the neck, thorax, abdomen, and pelvis as demonstrated by computed tomography. Appropriate correlations made to normal anatomic structure. *Prereq.* RAD 4304 or consent of instructor.

RAD 4460 Medical Imaging Quality Assurance (3 q.h.)

Establishing, conducting, and interpreting the results of a medical imaging quality assurance program are discussed. Covers basic imaging chain, film characteristics and sensitometry, test equipment and operation, data collection and interpretation. *Prereq.* RAD 4305 or equiv.

REAL ESTATE**RE 4301 Real Estate Fundamentals 1** (3 q.h.)

Introduction to the basic principles and terminology of real estate useful in various real estate business practices.

RE 4302 Real Estate Fundamentals 2 (3 q.h.)

Examine practices of real estate brokerage, including real estate appraisal, finance, development, management, and investment. Upon successful completion of RE 4301 and RE 4302, students may take the Massachusetts broker's or salesperson's examination. *Prereq.* RE 4301.

RE 4303 Real Estate Fundamentals (Intensive)

(6 q.h.)

Same as RE 4301 and RE 4302.

RE 4304 Real Estate Fundamentals (Brokers) (4 q.h.)

Reviews the general principles and practices of real estate fundamentals. General principles are examined with specific attention given to those areas of real estate that are tested on the Massachusetts broker's real estate examination. On successfully completing RE 4304, students are certified, which enables them to take the Massachusetts broker's exam. *Prereq.* RE 4302 or permission of instructor.

RE 4305 Real Estate Title Examination (3 q.h.)

Review of the general principles of abstracting and the function of the Registry of Deeds in the real estate business. General principles of title examinations are explored in detail, with attention given to recording deeds and the transfer of title in the conveyance of real estate. The function of the land court and registered land is also treated. Prepares the students for a possible career in title examination and may require field work in the form of activities to be performed at the Registry of Deeds.

RE 4323 Real Estate Appraisal 1 (3 q.h.)

Fundamental survey of the appraisal of single-family residences. Examines city or town neighborhood influences, site evaluation, building diagnosis, depreciation, the various approaches to value, and appraisal report preparation. *Prereq.* RE 4302.

RE 4324 Real Estate Appraisal 2 (3 q.h.)

Specialized overview of the appraisal of income properties. Includes application of the cost, market, and income approaches to apartment buildings and other commercial and industrial properties and of the various methods of capitalization and residual techniques. *Prereq.* RE 4323.

RE 4326 Appraising a Single-Family Dwelling

(3 q.h.)

Fundamental survey of the appraisal of single-family dwellings for the beginning appraiser, real estate broker, salesperson, lender, assessor, or builder. Includes city and neighborhood analysis, site evaluation, building materials and cost, and depreciation. Also includes selected research into appropriate market data, assembling pertinent information, applying relevant analytical techniques, and preparing appraisal reports, including FNMA/FMAC report forms.

RE 4328 Real Estate Financial Analysis 1 (3 q.h.)

Analysis of how to critically examine and analyze any proposed real estate investment. Explores in detail the financial aspects of acquisition, ownership, and disposition, and considers taxation of investments, forms of property ownership (organization of the venture), analysis of operating statements, financial accounting, use of leverage, "tax-sheltered" investments, and special situations. Develops criteria of risk and return on investment (ROI) that should be established by various types of investors. Spreadsheets utilized. *Prereq.* RE 4324 or instructor's permission.

RE 4329 Real Estate Financial Analysis 2 (3 q.h.)

Detailed analysis of the risks and rewards of real estate investments and problems involved in financing income properties, using case studies, homework problems, and class discussion and debate. Stresses class participation. *Prereq.* RE 4328.

RE 4330 Real Estate Financial Analysis (Intensive)

(6 q.h.)

Same as RE 4328 and RE 4329. *Prereq.* RE 4324.

RE 4340 Real Estate Development (3 q.h.)

Practical, step-by-step approach to the organization and development of a real estate project for the entrepreneur, banker, or broker. Includes the role of the developer, acquisition of land, site analysis, construction finance, gap financing and permanent commitments, project budgeting for capital costs and for income and expense, selection of professionals, negotiations of agreements with contractors and owners, and marketing the completed project. Case studies and guest lecturers may be featured. *Prereq.* RE 4329 or instructor's permission.

RE 4341 Real Estate Law 1 (3 q.h.)

Covers private real estate law, including ownership rights in land, leasehold rights, and easements in the land of another; legal forms of ownership; the transfer and acquisition of title and of other interests; recording of deeds, leases, and other instruments; and the landlord-tenant relationship.

RE 4342 Real Estate Law 2 (3 q.h.)

Includes topics such as public real estate law, including government powers, rights, and controls on privately owned real estate; zoning and subdivision controls; conservation controls; taxation of real estate; rent controls; and eminent domain. *Prereq.* RE 4341.

- RE 4344 Real Estate Management 1** (3 q.h.)
Prepares students for the practical problems of real estate management. Stresses the requisite day-to-day management of commercial, industrial, and residential properties as well as the need for a management strategy relating to long-term property values. *Prereq.* RE 4302 or instructor's permission.
- RE 4345 Real Estate Management 2** (3 q.h.)
Continuation of RE 4344. *Prereq.* RE 4344.
- RE 4346 Real Estate Management 3** (3 q.h.)
Continuation of RE 4345. *Prereq.* RE 4345.
- RE 4347 Real Estate Title Examination** (3 q.h.)
Specialized examination of real estate titles and the preparation of a complete report. *Prereq.* RE 4341 or instructor's permission.
- RE 4600 Honors Program 1** (4 q.h.)
Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 q.p.a.
- RE 4601 Honors Program 2** (4 q.h.)
See RE 4600.
- RE 4602 Honors Program 3** (4 q.h.)
See RE 4600.
- RE 4701 Independent Study 1** (3 q.h.)
Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.
- RE 4702 Independent Study 2** (3 q.h.)
See RE 4701.
- RE 4703 Independent Study 3** (3 q.h.)
See RE 4701.
- RE 4800 Advanced Tutorial 1** (3 q.h.)
Opportunity to take upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.
- RE 4801 Advanced Tutorial 2** (3 q.h.)
See RE 4800.
- RE 4900 Fieldwork** (6 q.h.)
Opportunity to enhance career development by applying academic background to practical problems in the workplace. See page 16 for details. *Prereq.* Approval of Program Director.

THERAPEUTIC RECREATION

- REC 4101 Principles and Practices of Therapeutic Recreation 1** (3 q.h.)
Overview of the field, including rationale, history, philosophy, goals, treatment settings, problems of institutionalization, adjunctive therapies, and professional development.
- REC 4102 Principles and Practices of Therapeutic Recreation 2** (3 q.h.)
Basic medical terminology with an overview of traumatic, sensory, neurological, or-

thopedic, and cardiovascular disabilities. Also includes prosthetics, orthotics, and an examination of attitudinal and societal barriers for the handicapped. *Prereq.* REC 4101 or consultant's permission.

REC 4103 Principles and Practices of Therapeutic Recreation 3 (3 q.h.)

Integrated case-method and systems approach to planning with individuals and groups. Focus is on assessment; quality assurance; designing, charting, and understanding the fundamental elements of activities; current legislation; and standards of service. *Prereq.* REC 4102.

REC 4105 Childhood Medical Procedures (2 q.h.)

Explores emergency care/first aid and medical procedures for infants, children and adolescents who are in the care of professional parents in group homes, foster homes and day care facilities based on the practices of the American Red Cross and Standard of Care by Pediatricians. Prevention will be a major focus.

REC 4110 Group Dynamics and Leadership 1 (3 q.h.)

Emphasis on self-awareness, identity, and interpersonal and intergroup communications. Includes process factors influencing the need to join the group; motivation to participate; membership screening; size and purpose of the group; open-ended and closed approaches; group problem solving; brainstorming; and conflict resolution.

REC 4111 Group Dynamics and Leadership 2 (3 q.h.)

Discussion of organization, development, and structure of groups; team building; role and value clarifications; ramifications of change; group characteristics; and leadership styles and techniques. *Prereq.* REC 4110.

REC 4112 Group Dynamics and Leadership (Intensive) (6 q.h.)

Same as REC 4110 and REC 4111.

REC 4118 Coping Skills for Child Rearing (2 q.h.)

A basic introduction to understanding coping skills for those in a parenting role. A primary focus of this course is to introduce cognitive, behavioral, emotional and environmental changes. Life style changes as well as various relaxation techniques will be presented.

REC 4200 Introduction to Learning Disabilities (3 q.h.)

Review of the behavioral characteristics of people with deficits in perceptual, integrative, or expressive processes that impair learning. Appropriate curricula and teaching methods surveyed.

REC 4210 Psychosocial Aspects of Disabilities and Illness (3 q.h.)

Exploration of issues and attitudes related to disability, such as societal understanding, handicapping conditions, adjustments, social networks, coping, and the interaction of care providers with the disabled.

REC 4215 Causes/Detection of Child Abuse (3 q.h.)

Introduction to the causes of abuse in individuals and in society. Detailed description/definitions of domestic violence, child abuse, neglect and sexual abuse. Assessing treatment services and intervention strategies are introduced.

REC 4250 Assessment of Learning Disabilities (3 q.h.)

Presentation of the formal and informal assessment procedures for general, specific, and behavioral learning deficits. Techniques for the remediation of these deficits in schools and home are reviewed. *Prereq.* REC 4200.

REC 4300 Arts and Crafts 1 (3 q.h.)

Overview of the creative media available for individual projects. Includes how to develop the technical capability to use a wide variety of materials in imaginative ways and the compilation of a personal arts and crafts manual as a reference tool.

REC 4301 Arts and Crafts 2 (3 q.h.)

Adaptation of creative skills to a therapeutic setting. Emphasizes continued development of technical capabilities and of instructional skills (one-to-one and group). Also discusses the planning, implementation, and integration of craft programs.

REC 4302 Arts and Crafts (Intensive) (6 q.h.)

Same as REC 4300 and REC 4301.

REC 4304 Dynamics of Family Life for the Disabled (3 q.h.)

Surveys the internal and external dynamics of family life. The significance of these factors to the mental health of the disabled is explored. Approaches to working with families is reviewed, as well as the effects of disabilities on the family unit itself.

REC 4310 Social Recreation (3 q.h.)

Planning, organizing, and motivating for social recreation activities, including ice breakers, mixers, active and inactive games, joint projects, and special events geared to a variety of settings.

REC 4311 Music Therapy (3 q.h.)

Introduction to the field of music therapy, including an exploration of historical and current theories and various techniques used in

clinical settings. Also includes a survey of the literature of therapy, covering special education and psychiatric and geriatric areas.

REC 4312 Media Resources and Techniques (3 q.h.)

Introduction to how to design overlays, transparencies, posters, brochures, and other materials and creatively use slides and tapes. Also includes the operation of public address systems, 16 mm. opaque film strips, overhead projectors, and other photographic devices.

REC 4313 Therapeutic Use of Dramatics (3 q.h.)

Explores the value of reinforcement and socialization through pantomime, improvisations, puppetry, skits and stunts, dramatic games, storytelling, and one-act plays. Emphasizes creativity in the therapeutic setting.

REC 4350 Legal Issues of Disability and Rehabilitation (3 q.h.)

An analysis of significant legal issues pertaining to rehabilitation and disability in education, employment, and housing. Pertinent federal and state statutes covered.

REC 4378 Parenting Skills 1 (3 q.h.)

Designed for both experienced and prospective parents/caregivers. It will reinforce and enhance methods that parents/caregivers have already developed to deal effectively with child caring situations. For those who feel less confident about their ability or experience, it will point out the way to an effective, consistent, philosophical approach.

REC 4379 Parenting Skills 2 (3 q.h.)

Designed to help parents/caregivers understand and differentiate between psychotic and neurotic behaviors, as well as to identify the symptoms of the unattached child. Specific techniques will be taught that will help the caregiver work successfully with the child, and in the case of the severely disturbed child, to be able to work as part of a therapeutic team in a treatment plan.

REC 4380 Parenting Skills Intensive (6 q.h.)

Same as REC 4378 and REC 4379.

REC 4401 The Nursing Home Experience (3 q.h.)

Exchange of empirical data relating to case experiences and institutional procedures encountered by activity leaders and other practitioners in nursing homes. Examines the feasibility of functional innovations in relation to present practices.

REC 4402 Leisure and Lifestyle (3 q.h.)

Focus on aspects contributing to life styles and the role of leisure. Examines specific lifestyles through reading and video-taped

materials. Gives students the opportunity to examine the impact of leisure on their own lifestyles and future aspirations.

REC 4403 Concepts of Leisure: Sociopsychological Perspectives (3 q.h.)

Explores the various sociopsychological perspectives of leisure and the relations on mores, social structure, roles and values, and personality to leisure expression. Investigates other pertinent social and environmental factors that contribute to the phenomena of leisure.

REC 4405 Management in Handicapped Residences (3 q.h.)

Designed to provide students with both theoretical and practical applications of management and leisure services on a community residence related to a population of mentally handicapped persons. Emphasis on management techniques and skills, appropriate leisure service planning and implementation, and direct work with both clients and staff in a community residence.

REC 4410 Therapeutic Recreation in Rehabilitation (3 q.h.)

Focuses on philosophy, goals, and background in rehabilitation; team membership concepts. Includes the role of therapeutic recreation in the acute and chronic hospital, the rehabilitation center, and in various community settings.

REC 4420 Activity and Movement Analysis (3 q.h.)

Covers basic anatomy as it relates to the identification of muscle groups in action. Analyzes both the movement and the ingredients of the activity and their suitability with given disabilities. *Prereq.* BIO 4175.

REC 4425 Mental Illness and Retardation (3 q.h.)

Origins and manifestations of mental illness and retardation are discussed. Historical and contemporary overviews include discussions of treatment, settings, case studies, and trends.

REC 4430 Therapeutic Recreation in Child Development (3 q.h.)

Explores growth and development patterns from birth to age 12. Includes study of the need for play, learning through play, and the therapeutic value of play. Examines biological, psychological, and sociological aspects by watching children at play.

REC 4440 Humanistic and Holistic Approaches in Therapeutic Recreation (3 q.h.)

Examines the use of trust, imagination, verbal and nonverbal communication, intuition, emotions, the will, spirit, motor coordination, sensory awareness, and self-responsibility to develop innovative programming.

REC 4445 Community Recreation for the Handicapped (3 q.h.)

Development and initiation of a comprehensive special needs program in the community by integrating efforts with school and special education departments, municipal officials, and parent groups. Covers needs statements, concepts of budgeting and funding, publicity, and program development. Site visits.

REC 4450 Vocational Planning for the Learning Disabled (3 q.h.)

Survey of the issues and processes that need to be taken into consideration when assisting the learning disabled in making vocational choices. Resources available for placement and training are covered, as well as how to design a skill assessment and interest inventory. The ultimate aim is to assist the client in the process of self-assessment, goal-setting, and the job search process.

REC 4460 The Process of Aging (3 q.h.)

Psychosocial dynamics of growing old, physical changes as a result of aging, the needs of people as they age, and attitudes toward work, retirement, and leisure are discussed. A study of dependency versus independence, remotivation, death and dying, and programs and services that add quality to the long life.

REC 4461 Camping for the Disabled (3 q.h.)

Covers basic goals, values, and procedures for operating outdoor education and camping programs. Emphasizes social integration with nondisabled children and the development of innovative programs.

REC 4462 Leisure Counseling (3 q.h.)

Remedial and developmental process designed to produce behavior and attitude changes in the client's leisure patterns. Includes development of competence in identifying, using, and referring to appropriate recreational resources. Compares leisure counseling fundamentals in a variety of recreational settings.

REC 4470 The Learning Disabled at Work (3 q.h.)

Examination of the learning disabled in the workplace, how their performance may be impacted, and what accommodations in job content may be necessary. The aim is to develop problem-solving strategies that facilitate the positive contributions a learning disabled person can make with some accommodations.

REC 4500 Practicum 1 (4 q.h.)

Assigned field experience in a treatment facility under supervision of a qualified professional. Students have the opportunity to learn about the direct service application of classroom theory through observation and participation and written reports, evaluations, and seminars. The experience averages eight hours a week for twelve weeks. *Prereq.* REC 4103 plus 12 q.h. of professional courses and consultant's permission.

REC 4501 Practicum 2 (4 q.h.)

Continuation of REC 4500. *Prereq.* REC 4500.

SOCIOLOGY-ANTHROPOLOGY**SOA 4100 Physical Anthropology** (formerly Anthropology 1) (3 q.h.)

Introduction to elements of physical anthropology, covering such subjects as primates, fossil humans and evolution, problems of heredity and genetics, race and racial classifications, and the bases of cultural behavior. *Not open to students who have credit for SOC 4010.*

SOA 4101 Cultural Anthropology: Preliterate Societies (formerly Anthropology 2) (3 q.h.)

Introduction to sociocultural anthropology. Examines the nature of language and the cultural institutions of human groups with simple foraging and horticultural adaptation. *Not open to students who have credit for SOC 4011.*

SOA 4102 Cultural Anthropology: Industrial Societies (formerly Anthropology 3) (3 q.h.)

The institutions and cultures of technologically advanced societies and states are explored.

SOA 4103 Anthropology Intensive A (6 q.h.)

Same as SOA 4100 and SOA 4101.

SOA 4104 Anthropology Intensive B (formerly Anthropology Intensive) (9 q.h.)

Same as SOA 4100, SOA 4101, and SOA 4102.

SOA 4146 Peasant Societies in a Changing World (3 q.h.)

Examines changes affecting traditional peasant cultures in the non-Western and Western worlds. Includes the processes occurring in situations involving culture contact, conquest, and colonialism.

SOA 4155 Individual and Culture (3 q.h.)

Focuses on cross-cultural comparisons of the socialization and acculturation of children and adults with respect to roles, values, and per-

sonality. Examines theories and methods used in psychological anthropology.

SOA 4160 Sex, Sex Roles, and the Family (3 q.h.)

Analyze popular and scientific notions about sex and the family by examining the social patterning of interactions in our culture, other cultures, and other species. Emphasizes the changing relationships between men and women.

SOA 4221 Culture and Medicine (3 q.h.)

Perspectives on medicine and health care are rapidly changing. As costs skyrocket, alternatives to "curative" medicine are being sought. Uses an anthropological perspective and draws on the vast amount of cross-cultural literature in exploring the impact of sociocultural factors on the incidence, definition, treatment, and prevention of illness as well as the organization of health services.

SOA 4266 Folklore (3 q.h.)

Focus on Folklore, art, and song in various societies and how they are studied. Examines contemporary American materials.

SOA 4322 Anthropological Theory (3 q.h.)

History of the major orientations and philosophies of anthropology, including evolutionist, culture area, and historical approaches and functional, structural, ecological, and cognitive modes of analysis.

SOA 4430 Native North American Peoples (3 q.h.)

Past and present circumstances of a number of native North American peoples are explored.

SOA 4431 African Peoples and Cultures (3 q.h.)

Topics include African geography, prehistory, and culture; the spectrum of societal complexity ranging from Mbuti egalitarianism to Ashanti federation; and the problems of political, economic, and social change in contemporary Africa.

SOA 4434 Latin American Peoples and Cultures (3 q.h.)

Examine tribal and peasant adaptations of native and Hispanic populations to changing conditions in Latin America.

SOA 4470 Religion in Cross-Cultural Perspective (3 q.h.)

Comparative analysis of the rituals, beliefs, and religious institutions of various groups.

SOCIOLOGY**SOC 4010 Principles of Sociology 1** (4 q.h.)

Introduction to basic concepts and theories relating to the study of people as participants in group life. Emphasizes socialization,

culture, social structure, primary groups, family, social stratification, and population. *For Alternative Freshmen-Year students only. Not open to students who have credit for SOC 4100 or SOC 4101.*

SOC 4011 Principles of Sociology 2 (4 q.h.)
Continuation of SOC 4010. Emphasizes critical analysis of American society with particular attention to problems of social, political, urban, and industrial change. *For Alternative Freshmen-Year students only. Not open to students who have credit for SOC 4101 or SOC 4102. Prereq. SOC 4010 or equiv.*

SOC 4100 Roles, Culture, and the Individual (formerly Fundamental Issues in Sociology) (3 q.h.)

Examines basic theoretical perspectives, research methods, and concepts of sociology, including society, status and role, socialization, and social groups. *Not open to students who have credit for SOC 4010.*

SOC 4101 Inequality and Institutions (formerly The Individual and Social Roles) (3 q.h.)
Discusses involvement of individuals in society, including culture, social interaction, deviance, sex roles, sexuality, and family. *Not open to students who have credit for SOC 4010 or SOC 4011. Prereq. SOC 4100 or equiv.*

SOC 4102 Institutions and Social Change (formerly Critical Issues Facing Society) (3 q.h.)
Examines important social factors, including business and industry, population and ecology, science and technology, class, and race and ethnic relations. *Not open to students who have credit for SOC 4011. Prereq. SOC 4100 or equiv.*

SOC 4103 Introduction to Sociology Intensive A (formerly Sociology Intensive) (9 q.h.)
Same as SOC 4100, SOC 4101, and SOC 4102.

SOC 4104 Introduction to Sociology Intensive B (6 q.h.)
Same as SOC 4100 and SOC 4101.

SOC 4120 Sociology of Boston (3 q.h.)
The city is a laboratory for exploring the people's search for a lifestyle and the satisfaction of their needs. The city of Boston from the perspectives of environmental development, neighborhood and intergroup relations, institutional services, and symbolic meanings. Includes field trips with workbook and requires use of documentary and literary sources for term paper report. *Does not meet elective requirements for Sociology-Anthropology major.*

SOC 4125 Social Problems (3 q.h.)

Contemporary American social problems and the application of sociological concepts, methods, and principles to these problems are explored.

SOC 4147 Urban Sociology (3 q.h.)

Topics include various causes, characteristics, and effects of urbanization in several different cultures. Gives specific attention to the problem of urban and suburban living and the changing structure of the city.

SOC 4154 Sex and Gender Roles in Society (formerly Sex in Society: The Study of Sex Roles) (3 q.h.)

Explores historical and contemporary developments, examining the ways in which men's and women's changing roles are related to society at large.

SOC 4155 Sociology of the Family (formerly Sociology of the Family 1) (3 q.h.)

Studies the family as a social institution in several selected cultures; family interrelations with political, economic, and educational institutions; and the changing nature of the family.

SOC 4156 Violence in the Family (formerly Sociology of the Family 2) (3 q.h.)

Examines physical, emotional, and sexual violence that occurs in families, emphasizing child and spouse abuse. Analyzes definitions, prevalence, causes, prevention, and treatment of specific cases of violence. Primary focus is on social and policy issues and problems of legal intervention.

SOC 4170 Race and Ethnic Relations (3 q.h.)

Focuses on relationships among various racial, national, cultural, and religious groups, emphasizing the development of black-white relationships in American society. Also covers the problems of contemporary minority peoples in American and other societies.

SOC 4175 Sociology of Work (3 q.h.)

Explores the world of work, focusing on the development of occupational cultures, the nature of careers, and the meanings and implications of professionalization. Students are encouraged to do a project on a career they are considering or one in which they have had practical experience on co-op.

SOC 4176 Business and Industrial Sociology (3 q.h.)

Examines role of industry in modern society. Covers similarities and dissimilarities among industrial societies, bureaucracy and its alternatives, unions, supervision democracy and

manipulation, the individual on the assembly line, sabotage of the organization, and the role of wages and alienation.

SOC 4185 Sociology of Deviant Behavior (3 q.h.)

Topics include a variety of social problems and their relation to the organization of society. Pays particular attention to alcoholism, sexual offenses, drug abuse, mental disorders, and other responses to conditions of urban industrial society.

SOC 4186 Social Control (3 q.h.)

Discusses group membership as a determinant of behavior, including analysis of status and role, patterns of authority, power, and group ideology as factors in the evaluation of conduct.

SOC 4190 Juvenile Delinquency (3 q.h.)

Emphasis on factors involved in juvenile delinquency and their implications for prevention, rehabilitation, and treatment.

SOC 4195 Drugs and Society (3 q.h.)

Introduction to the sociology of drugs. Examines social definitions of drugs, conditions of their use, and socialization into drug use. Considers deviant drug use and effects of social control on definitions and use. A range of licit and illicit drugs is considered.

SOC 4202 Sociology of Drinking (3 q.h.)

Exploration of how different groups and societies organize drinking as a social act, and the consequences of that organization. Covers the cultural meaning assigned to drinking, the social elements found in all drinking situations, how members of social groups learn how to drink, and the social and psychological functions of drinking.

SOC 4205 Law and Society (3 q.h.)

Topics include functions of law in modern society; legislation, litigation, and adjudication as social processes; the legal professions, the courts, and the administration of justice; laws and judicial decisions on controversial social issues; and laws regulating domestic, industrial, and other major social relationships.

SOC 4215 Medical Sociology (3 q.h.)

Examination of sociological concepts and research relating to patterns of behavior in the areas of health and disease. Emphasizes the family, community, medical organizations, class, and status as social subsystems related to the field of health.

SOC 4220 Sociology of Mental Health (3 q.h.)

Covers sociological aspects of mental health and mental disorder. Examines the social

history of mental illness, epidemiological and cross-cultural approaches to mental disorder, the career of the mental patient, the functions of psychiatry in society, community and social treatment modalities, and social psychiatry.

SOC 4225 Social Gerontology (3 q.h.)

Analyzes issues and questions of aging, with special attention to social and economic consequences of the aging process, such as retirement and productivity, health care problems, nursing home residences, widower- and widowhood, and the approach of death. Gives examples relating to aging in other cultures in a search for new answers to social problems of aging in the United States. Discusses how to anticipate, cope with, and even prevent problems of aging that concern self, family, and clients or patients.

SOC 4226 Work, Leisure, and Aging (3 q.h.)

Includes discussion of theory and practice of leisure time activities as they relate to the older adult. Examines the social, cultural, and economic aspects of work, including housework, and the meaning of leisure. Explores various types of leisure activities and resources as well as how to build skills and design and implement activities.

SOC 4235 Death and Dying (3 q.h.)

Examines the treatment of death and dying, including problems faced by health care professionals, family members, institutions, the funeral industry, and the dying themselves. Covers cross-cultural perspectives, the social distribution of mortality, the changing nature of death, and the ethical problems in determining life and death with particular attention to such issues as abortion, suicide, and ceasing medical intervention.

SOC 4240 Sociology of Human Service Organizations (3 q.h.)

Explores the contradiction between what human service organizations set out to do and what they actually accomplish. Includes how human service organization goals are defined, how clients become labeled, and the societal constraints placed on clients, workers, and the organizations.

SOC 4241 Human Services Professions (3 q.h.)

Covers human services, viewed from the perspectives of the recipient, the worker, and the society at large. Includes analysis of why they are needed, how agencies and programs have developed, and the basic skills, attitudes, values, and knowledge required of the human service worker today.

SOC 4245 Poverty and Inequality (formerly Sociology of Inequality) (3 q.h.)

Historical analysis of American class and ethnic differences, drawing on comparisons with other countries. Includes critical evaluation of sociological research and theories relating to the causes and effects of poverty and societal responses to it. Suitable for students in applied fields, such as nursing, criminal justice, education, allied health, pre-med, and pre-law.

SOC 4255 Sociology of Sport (3 q.h.)

Topics include games and sport from a sociological perspective, with particular reference to contemporary American society. Includes the role of play in modern society, the social organization of specific games and sports, and the relation of organized sport to the larger society.

SOC 4260 Introduction to Social Work Practice 1 (3 q.h.)

Explores the functions of the helping profession of social work, its settings and methods. Covers specific techniques, such as interviewing, history taking, and recording skills.

SOC 4261 Introduction to Social Work Practice 2 (3 q.h.)

Continuation of SOC 4260, with particular attention to the functioning of social workers in selected settings. *Prereq.* SOC 4260 or equiv.

SOC 4262 Introduction to Social Work Practice 3 (3 q.h.)

Continuation of SOC 4261. Emphasizes enhancement of practice skills. *Prereq.* SOC 4261 or equiv.

SOC 4276 Popular Culture (3 q.h.) (formerly Sociology of Popular Culture)

Significance of expressions of popular culture, such as film, television, music, and literature is explored. Examines media production, organization, technology, and audience consumption. Also covers the relationship between popular culture and existing socio-economic institutions.

SOC 4300 Social Theory 1 (3 q.h.)

Historical survey of sociological theorists, including the work of de Tocqueville, Comte, Marx, Durkheim, and Cooley. *Prereq.* Instructor's permission or 12 q.h. in Sociology-Anthropology.

SOC 4301 Social Theory 2 (3 q.h.)

Covers major theoretical issues in sociology. Discussion concentrates on systematic questions and topics rather than on particular theorists, but material is drawn from such theorists as Weber, Simmel, Thomas, Mannheim, Merton, and Parsons. *Prereq.* SOC 4300 or equiv.

SOC 4302 Social Theory 3 (3 q.h.)

Seminar focuses on questions of theoretical interest, such as the problem of order, the problem of change, and the role of the individual in change. Students present papers in class. *Prereq.* SOC 4301 or equiv.

SOC 4303 Social Theory (Intensive) (9 q.h.)

Same as SOC 4300, SOC 4301, and SOC 4302. *Prereq.* Instructor's permission or 12 q.h. in Sociology-Anthropology. Not open to students who have credit for SOC 4300, SOC 4301, or SOC 4302.

SOC 4310 Class, Power, and Social Change (3 q.h.)

Discusses theories of social equality and inequality as applied to the exercise of power and to the growth and development of social movements and group conflict. Takes a large-scale, social-change point of view.

SOC 4331 Social Research Methods 1: Generating and Investigating Research Problems (3 q.h.)

Examines methods for gaining knowledge through social research. Emphasizes the practical aspects of research, such as the problems sociologists face in doing research and how they have been solved. Students are required to design a small study.

SOC 4332 Social Research Methods 2: Tabulating and Analyzing Social Data (3 q.h.)

Covers methods of tabulating, presenting, summarizing, and analyzing data, including elementary descriptive and inferential statistics and how to use them. Emphasizes statistics as a tool and introduces the use of the computer. *Prereq.* SOC 4331 or equiv.

SOC 4333 Social Research Methods 3: Doing Social Research (3 q.h.)

Students carry out the study they designed in SOC 4332, analyze data, and report results. Includes the ethics and politics of social research and the interrelationship of social action, social research, and theory building. *Prereq.* SOC 4332 or equiv.

SOC 4348 Seminar in Urban Studies (3 q.h.)

Interdisciplinary approaches to analysis of urban issues. Includes continuing student projects. *Prereq.* one course in an urban studies field.

SOC 4375 Sociology of Occupations and Professions (3 q.h.)

Topics include social relations within occupational groups; occupational structures; and the institutional aspects of an occupation. Also discusses relationships among supervisors, peers, colleagues, subordinates, and clientele and their significance for work-role behavior.

SOC 4376 Sociology of Industry (3 q.h.)

Comparison of pre-industrial and industrial society, stressing the impact of industry on society and the interrelationship of industry, culture, and values. Also discusses diversification, specialization, human relations, and formal and informal groups.

SOC 4805 Field Work in Sociology (6 q.h.)

Designed to enhance career development by allowing students to earn credit for the application of their academic backgrounds to practical problems in the work place. See page 16 for details. *Prereq.* completion of 15 q.h. in Sociology and Program Director's approval.

SOC 4815 Advanced Tutorial 1 (3 q.h.)

Opportunity to take an upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.

SOC 4816 Advanced Tutorial 2 (3 q.h.)

See SOC 4815.

SOC 4820 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 q.p.a.

SOC 4821 Honors Program 2 (4 q.h.)

See SOC 4820.

SOC 4822 Honors Program 3 (4 q.h.)

See SOC 4820.

SOC 4830 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

SOC 4831 Independent Study 2 (3 q.h.)

See SOC 4830.

SOC 4832 Independent Study 3 (3 q.h.)

See SOC 4830.

SOC 5225 Social Gerontology (3 CEUs)

Same as SOC 4225.

SOC 5226 Work, Leisure, and Aging (3 CEUs)

Same as SOC 4226.

SOC 5240 Sociology of Human Service Organizations (3 CEUs)

Same as SOC 4240.

SPEECH COMMUNICATION**SPC 4001 Speaking Skills for International Students 1** (3 q.h.)

Introductory instruction in pronunciation and intelligibility for formal and informal situations. Monitors communication skills through use of video and audiotape recordings and work in the language laboratory. Following diagnostic testing, students participate in in-

dividualized small- and large-group instructional situations. Placement tests are given during the first week of class.

SPC 4002 Speaking Skills for International Students 2 (3 q.h.)

Intermediate-level course designed for persons who have previously studied English, but who need to develop oral communication proficiency. Monitors communication skills through use of video and audiotape recordings and work in the language laboratory. Following diagnostic testing, students participate in individualized small- and large-group instructional situations. Placement tests are given during the first week of class.

SPC 4003 Speaking Skills for International Students 3 (3 q.h.)

Advanced-level course designed for students who have previously studied English and who can make themselves understood easily, but who have difficulty conversing. Includes task-oriented interaction, a variety of two-person communication situations, and small-group interactions. Progress is monitored through use of video and audiotape recordings. Placement tests are given during the first week of class.

SPC 4101 Fundamentals of Human Communication

(formerly Effective Communication 1) (3 q.h.) Introduction to development of personal communication skills, shaping messages, sending messages, listening, understanding nonverbal cues, trusting, giving and receiving feedback, interacting, and coping with the barriers to communication.

SPC 4102 Group Discussion (formerly Effective Communication 2) (3 q.h.)

Topics include small-group communication, elements of group structure, task and maintenance functions, leadership, and formalized methods of group problem solving and decision making.

SPC 4104 Effective Communication (Intensive) (6 q.h.)

Same as SPC 4101 and SPC 4102.

SPC 4111 Voice and Articulation (3 q.h.)

Development of the speaking voice, with emphasis on articulation, pitch control, and vocal variety and flexibility. Includes basic theory of the vocal mechanism.

SPC 4150 Self-Concept and Communication (3 q.h.)

Examination of the ways communication patterns are formed and how they work in our personal and professional lives. Emphasizes

how self-concept affects communication. By combining thinking, feeling, and doing, students can develop awareness of their attitudes and habits and explore alternative communication patterns.

SPC 4151 Listening (3 q.h.)

Analyzes listening effectiveness in professional and personal situations. Reasons for poor listening, techniques for effective listening, and giving and receiving feedback are covered.

SPC 4152 Interviewing (3 q.h.)

Topics include fundamental communication principles and how they apply to the interview process. Examines these principles from the perspectives of the interviewer and the interviewee, helping students to prepare for both roles. Gives special attention to employment, information retrieval, and persuasive interviews.

SPC 4153 Techniques of Persuasion (3 q.h.)

Covers communication strategies used when attempting to influence others. Examines instances of persuasion as they occur in advertising, politics, social interaction, sales, and business.

SPC 4154 Negotiation Skills (3 q.h.)

Examination of skills involved in bringing matters to mutually acceptable settlements. Through lectures, discussions, case studies, and classroom activities, students explore conflict resolution in both personal and professional settings.

SPC 4155 Organizational Communication (3 q.h.)

An exploration of communication management within organizations. Topics include the role of communication in management, the management and control of information flow, and strategic communication planning.

SPC 4160 Communication and the Media (3 q.h.)

An overview of the structure, functions, and history of American mass media. Presents a basic understanding of the process of mass media as it intersects society in general, and the lives of individuals in particular.

SPC 4201 Argumentation (3 q.h.)

Basic concepts of argumentation, such as evidence, research, and refutation, with emphasis on the psychology of the audience and the various types of group discussions are discussed.

SPC 4221 Interpersonal Communications 1 (3 q.h.)

Examines ways of becoming more aware of one's self and one's relationship to others. Presents options for communicating and for

increasing one's knowledge of the group process. Limited enrollment.

SPC 4222 Interpersonal Communications 2 (3 q.h.)
Continuation of SPC 4221. *Prereq.* SPC 4221 or instructor's permission.

SPC 4225 Family Communication (3 q.h.)

Introduction to how communication affects the development and maintenance of family relationships. Topics include marital, parent/child, sibling, and extended family communication patterns; problem identification and problem-solving skills in family communication.

SPC 4231 Female/Male Communication 1 (3 q.h.)

Examines ways in which female/male relations are created, maintained, developed, or dissolved through communication. Covers the influence of family, friends, the media, and "significant others" in sustaining stereotypes for both sexes and the impact of such stereotyping on the self and on effective communication. Also looks at the use of verbal and nonverbal communication to understand the types of relationships between men and women and how different female/male language styles affect these relations.

SPC 4232 Female/Male Communication 2 (3 q.h.)

Discusses interaction and transactional approaches to analyzing existing relationships. Provides the opportunity to develop skills in diagnosing communication transactions and in developing strategies for effective communication. The influence of supportive and defensive environments and the communication behavior of each are examined and applied to strategies for improving relationships between males and females. *Prereq.* SPC 4231 or instructor's permission.

SPC 4240 Managing Interpersonal Conflict (3 q.h.)

Basic concepts involved in the management of conflict in interpersonal situations, such as understanding attitudes about conflict, studying message patterns in conflict interactions, and exploring a variety of conflict resolution methods are discussed.

SPC 4251 Business and Professional Speaking (3 q.h.)

Covers practice in the organization and presentation of material to fit varying audiences. Emphasizes delivery techniques and effective presentation of ideas.

SPC 4260 Communication Research Methods (3 q.h.)

This course provides an overview of the research process and examines various types of research methods as they relate to the study of human communication.

TECHNICAL COMMUNICATIONS

TCC 4030 Word Processing: A Comprehensive

Overview (2 q.h.) (formerly Word Processing for Writers and Editors)

Topics include basic, intermediate, and selected advanced functions of one or more of the most widely-used word processing programs, such as WordStar, MultiMate, or WordPerfect. Minimal typing skills are recommended.

TCC 4050 WordStar (2 q.h.)

Includes composing and writing on a computer screen using WordStar, the professional text-editing system used by many technical writers, editors, and other publishing professionals. Course provides interpretation of the instruction manual as well as hands-on experience with University-supplied personal computers and software.

TCC 4060 MultiMate (2 q.h.)

Using this powerful, menu-driven word processor with university-supplied hardware, students learn to create, format, and modify various types of documents. Selected advanced functions also covered. Minimal typing skills are recommended.

TCC 4101 Technical Writing 1 (3 q.h.)

Introduction to basic technical writing skills, emphasizing selecting and organizing data. Includes audience analysis, research techniques, and descriptions of objects, mechanisms, and processes. Provides practice in descriptive writing, classification and definition, paragraphing, and preparing technical documentation outlines. Includes frequent technical writing exercises and projects applicable to both software and hardware writing tasks. *A writing proficiency test is given at the first class meeting.*

TCC 4102 Technical Writing 2 (3 q.h.)

Application of the information gathering, organizational, and technical writing skills acquired in TCC 4101 to more advanced projects. Extensive practice in formatting, organizing, writing, and editing technical reports. *Prereq. TCC 4101.*

TCC 4103 Technical Writing (Intensive) (6 q.h.)

Same as TCC 4101 and TCC 4102. *A writing proficiency test is given at the first class meeting.*

TCC 4105 Editing for Science and Technology (3 q.h.)

Covers fundamentals of editing as they apply to scientific, technical, and engineering writing. Examines the role of the editor in business, industry, and the sciences; basic editorial services such as proofreading, copy

and content editing, production editing, and project editing; analysis and critique of manuscripts; work with authors; the editor as writer and interviewer; and science interpretation and technical translation. Accelerated work for students already skilled in spelling and grammar. *Prereq. TCC 4101 or instructor's permission.*

TCC 4110 Technical-Promotional Writing (3 q.h.)

Explores structure, style, and graphic presentation of technical-promotional writing in a high-tech environment. Students are trained to combine technical knowledge and writing skills in developing quality technical brochures, articles, product catalogs, demonstration kits, slide presentations, and video scripts. *Prereq. TCC 4101, TCC 4102, or instructor's permission.*

TCC 4301 Computer Software Technical Writing 1 (3 q.h.)

Introduction to the tasks and problems unique to software technical writing. Includes review of fundamental software concepts, the role and importance of software documentation, component parts of software technical manuals and their purposes, tutorial and reference functions of manuals, research tools for manual writing, and the writing process itself. *Prereq. TCC 4101 and MIS 4102 or instructor's permission.*

TCC 4302 Computer Software Technical Writing 2 (3 q.h.)

Continuation of TCC 4301. *Prereq. TCC 4301.*

TCC 4303 Seminar in Software Technical Writing (3 q.h.)

An advanced case-study seminar on contemporary problems in technical writing for the working or prospective writing professional. Emphasizes integrating the viewpoint of the software developer with the task-oriented needs of the end user. Includes system manual design; computer design; modularity; and system evolution. *Prereq. TCC 4302 or instructor's permission.*

TCC 4311 Instruction Manual Writing 1 (formerly Hardware Technical Manual Writing 1) (3 q.h.)

Introduction to the fundamentals of technical manual writing, including the theory and practice of manual design, organization, and content. Covers copyright law, product liability, graphic design, readability, manual specifications and standards, illustrations, and reproduction techniques. Emphasizes hardware operations manuals. Includes individual and class design and writing projects. *Prereq. TCC 4101 and TCC 4102.*

TCC 4312 Instruction Manual Writing 2 (formerly Hardware Technical Manual Writing 2) (3 q.h.)

Application of skills acquired in TCC 4311 to an entry-level technical manual writing project. Students elect individual or group writing and production projects for high-technology equipment or systems lacking adequate documentation. Includes instruction in writing safe, legible operating instructions and descriptions of installation procedures, principles of operation, and maintenance. Also covers manual changes and updates. *Prereq.* TCC 4311 or instructor's permission.

TCC 4313 Instruction Manual Writing Intensive (6 q.h.) Same as TCC 4311 and TCC 4312. *Prereq.* TCC 4101 and TCC 4102.

TCC 4320 Proposal Writing (3 q.h.)

Background in the preparation of proposals, including how to analyze a request for proposal or bid set. Introduces the various types of proposals generated by industry and provides an opportunity to prepare a proposal in a simulated situation, through role playing and participation on a proposal preparation team. Includes considerable analysis and writing practice. *Prereq.* TCC 4102 or instructor's permission.

TCC 4330 The Business and Technical Presentation (3 q.h.)

Application of the principles of technical communication to audiovisual presentations. Includes audience analysis, techniques of organization, script preparation, media selection, the design and production of visuals, the influence of physical factors on communication, and the elements of effective delivery. Participants prepare and deliver presentations and receive video playback and peer critiques.

TCC 4340 Technical Writing Portfolio Development (3 q.h.)

Covers techniques and methods of developing a professional portfolio of published technical writing projects. The organizational and communications skills acquired in lower-level technical writing courses are brought together and applied to "real-world" technical writing problems. *Prereq.* TCC 4302 or instructor's permission.

TCC 4350 Concepts of Modern Technology 1 (3 q.h.)

Surveys applications of physical science to mechanical devices and introduces the laws of thermodynamics. Considers the influence of material properties on design and manufac-

turing techniques. *Prereq.* MTH 4006 or equiv.

TCC 4351 Concepts of Modern Technology 2 (3 q.h.)

Surveys applications of physical science to electrical and electronic devices and introduces electronic circuit design. Includes a comparison of various devices used for amplification and control, and a study of the development of the electronic digital computer and the components involved in the manufacture of computers. *Prereq.* TCC 4350.

TCC 4802 Independent Study 1 (3 q.h.)

Opportunity to take upper-level course independently. *Prereq.* 87 q.h. See page 17.

TCC 4803 Independent Study 2 (3 q.h.)

See TCC 4802. *Prereq.* TCC 4802.

TCC 4805 Field Work in Technical Communications (6 q.h.)

Designed to enhance career development by allowing students to earn credit for the application of their academic backgrounds to practical problems in the work place. See page 16 for details. *Prereq.* completion of 18 q.h. in Technical Communications and Program Director's approval.

TRANSPORTATION

TRN 4301 Elements of Transportation 1 (3 q.h.)

Introduction to regulatory, economic, and management aspects of transportation. Covers concerns of shipping industry, government, and carriers. Includes history of cost, rate-making, operations, entry, mergers, and inter-city passenger and cargo carriage. Essential to students in business, law, or government.

TRN 4302 Physical Distribution Management 1 (3 q.h.)

Introduction to the physical distribution management concept. Studies time and place utility of manufactured products. Includes customer service and profitability requirements: getting merchandise to the customer at the right time, place, and in the right condition. Covers transportation alternatives, inventory control, warehousing, cost control, and location strategy. Contemporary texts and case methods are used.

TRN 4303 Elements of Transportation 2 (3 q.h.)

Continuation of TRN 4301. Examines new thrust of lower costs, including contracting and negotiating for carrier service that has resulted from deregulation. *Prereq.* TRN 4301.

TRN 4304 Physical Distribution Management 2 (3 q.h.)

Continuation of TRN 4303. Analytical skills developed through presentation of problems and cases. *Prereq.* TRN 4302.

TRN 4305 Traffic Management 1: Rates and Tariffs (3 q.h.)

Includes the interpretation and use of tariffs.

Examines classifications, rate scales, tariff rules, rate-making procedures, and ICC law and practice. *Prereq.* TRN 4301.

TRN 4306 Traffic Management 2--Selected Topics (3 q.h.)

Further study of traffic management, covering such topics as routing, claims, insurance, consolidation, and packaging. *Prereq.* TRN 4305.

TRN 4316 Carrier Management (3 q.h.)

Explores the transportation system from the carrier viewpoint. Covers managerial response to a heavily regulated and rapidly expanding environment. Includes carrier decision-making involving routes, scheduling, financing, and pricing of services.

TRN 4321 Transportation Negotiations (3 q.h.)

Principle elements of transportation regulation, public policy, and the role of federal and state regulatory agencies are covered. Includes types of commerce, carriers, and services subject to changing regulation, entry and exit requirements, economic and cost considerations, and selective rate and tariff construction rules. Examines industry practices covering performance, requirements, liabilities, and responsibilities of shippers, regulated carriers, and exempt forms of transportation. Discusses rules and procedures established by the ICC and Massachusetts DPU. *Prereq.* TRN 4301.

TRN 4325 Management of Warehouse Operations (3 q.h.)

Management of warehouses is analyzed. Includes site selection, construction, finance, operations, measurement of performance, and warehouse technology.

TRN 4334 Private Trucking (3 q.h.)

The formation of a private trucking operation from a management focus is explored. Includes legal guidelines, purchase versus lease, operations, and performance measurement.

TRN 4340 Air Transportation (3 q.h.)

Topics include economics and regulation of air carriage certified by the Civil Aeronautics Board. Includes entry, operations, pricing, mergers, cost analysis, and financing.

TRN 4341 Commuter Transportation (3 q.h.)

The scope and status of transportation in the metropolitan area is examined. Includes plan-

ning and financing urban transportation systems, the role of local, state, and federal government units, and the problems of transit management.

TRN 4342 Transportation Loss, Damage, and Other Claims (3 q.h.)

Covers rules, regulations, and other pertinent elements of transportation claims resulting from the loss or damage of cargo, overcharges and undercharges, and related carrier and shipper activities.

TRN 4350 International Transportation and Distribution Management

(3 q.h.)

Examines the safe and efficient overseas transportation of products by air or water. Covers major indirect supporting business and agencies involved in the international movement of people and goods.

TRN 4600 Honors Program 1 (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 17 for details. *Prereq.* 96 q.h., 3.5 q.p.a.

TRN 4601 Honors Program 2 (4 q.h.)

See TRN 4600.

TRN 4602 Honors Program 3 (4 q.h.)

See TRN 4600.

TRN 4701 Independent Study 1 (3 q.h.)

Opportunity to undertake special research. See page 17 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

TRN 4702 Independent Study 2 (3 q.h.)

See TRN 4701.

TRN 4703 Independent Study 3 (3 q.h.)

See TRN 4701.

TRN 4800 Advanced Tutorial 1 (3 q.h.)

Opportunity to take upper-level course independently. See page 16 for details. *Prereq.* 87 q.h.

TRN 4801 Advanced Tutorial 1 (3 q.h.)

See TRN 4800.

TRN 4900 Fieldwork (6 q.h.)

Opportunity to enhance career development by applying academic background to practical problems in the workplace. See page 16 for details. *Prereq.* Approval of Program Director.

General Information

Tuition and Fees

Tuition

Tuition for all credit courses is \$106 per quarter hour of credit. Checks and drafts for all charges are to be made to the order of Northeastern University. Charges for registration and tuition for special courses are at the rate specified for each course, with the exception of drama and nontutorial courses. There is no reduction in fees for auditing courses.

Noncredit courses are charged at quarter-hour rates comparable to those of credit courses meeting on an equivalent contact-hour schedule.

Students are not permitted to attend class sessions or take any examination or test until they have paid their tuition fees or have made satisfactory arrangements for payment.

It is the student's responsibility to ensure that all tuition charges and fees are paid when due. If a bill has not been received prior to the start of classes each quarter, the student should come in person to the Bursar's Office, where a bill will be processed.

Any discrepancies in billing should be immediately brought to the attention of the Bursar's Office. *If there is a billing problem, the undisputed portion of the bill should be paid on time to avoid any additional late fees.*

Failure to receive a bill through the mail or to pay the undisputed portion of the bill is not justification for late payment of amounts actually owed.

Students will not be advanced in class standing or permitted to re-enroll in the University nor will degrees be conferred until all financial obligations to the University have been met.

Tuition for Courses in Other Northeastern Departments or Colleges

University College students assigned to courses in other departments or colleges of the University are charged the tuition fees effective in the departments or colleges in which they are enrolled.

Initial Registration Fee

A nonrefundable \$10 registration fee for first-time University College students is billed with tuition fees.

Tuition Budget Payment Plans

Occasionally situations develop--usually beyond the control of the student--that make it difficult to meet the payments in the manner outlined above. Under such circumstances, the student is advised to contact the Bursar's Office to arrange for deferred payment. The only deferred payment plan offered is as follows and applies only to the amount owed for the current quarter:

First payment	1/3 due first week of quarter
Second payment	1/3 due approx. fourth week of quarter
Balance	1/3 due approx. eighth week of quarter

Such arrangements should be made before the end of the first week of the quarter or within one week of the date of registration if the student enters late. Deferred payment of tuition entails a fee of \$10, which is levied on all accounts not paid by the end of the second week of classes. Failure to take immediate action will result in a late payment fee of \$50.

Tuition Underwritten by Employers

An increasing number of companies are underwriting part or all of the cost of tuition for students in their employ. In cases where payment is to be made directly by the employer to the University, the student should furnish the Bursar's Office with a purchase order covering registration or a statement from an officer of the company certifying that the company is underwriting the tuition. In cases where students are being reimbursed by their employer, tuition must be paid by the student according to the prescribed regulations to avoid late payment charges.

Veterans' Benefits

Any veteran covered by Public Law 89-358 should report to 126 Hayden Hall to fill out the proper enrollment forms.

Late Payment Fee

Bills for tuition and fees are payable in accordance with the due date shown. A late payment fee of \$50 is charged for failure to make payments in accordance with the prescribed regulations.

Refund of Tuition

The general policy in all schools and colleges of the University with respect to refunds of tuition is as follows: The University provides all instruction on an academic-quarter basis, for which students pay at the beginning of each quarter. Tuition refunds are granted through the first four weeks of a quarter only when specific conditions are met and are granted only on the basis of the date appearing on the official withdrawal application when filed with the Registrar in 120 Hayden Hall. Nonattendance does not constitute official withdrawal. Questions regarding refunds should be discussed with the Bursar.

Refunds are granted in accordance with the following schedule:

Official withdrawal filed within	Percentage of tuition credited
First week of quarter	100%
Second week of quarter	75%
Third week of quarter	50%
Fourth week of quarter	25%

Fees

New Low Rate for Friday and Saturday Intensives

University College offers a selection of six-quarter-hour courses at the Boston and Burlington campuses on Friday evenings and Saturdays at a special reduced tuition rate of \$536 (\$100 less than the normal tuition). Check the current *Schedule Guide* for a list of these courses.

Student Center Fee

All students in University College on the Huntington Avenue campus are charged \$.75 each quarter for the services available in the Student Center.

Laboratory Fees

Students enrolled in courses that carry a laboratory fee must purchase a Laboratory Fee and Deposit Card from the Cashier's Office (\$15 for extra cards).

A fee of \$45 is charged for biology courses and for those health professions courses that include a laboratory. For chemistry courses, cards cost \$60 per quarter with the possibility of a \$5 refund at the end of the quarter, depending on breakage. Upon completion of the course or withdrawal during the quarter, the student must check his or her status with the laboratory attendant. The Cashier's Office will then refund any unused balance shown on the card.

A laboratory fee of \$40 is also charged for film and photography courses, for some art studio courses, for arts and crafts courses, and for criminal justice and security students who enroll in a forensic laboratory. A \$40 fee is charged for the food preparation course in the hotel and restaurant management program.

Music students enrolled in a music tutorial pay a special rate. For details contact Charles Mokotoff, University College Music Coordinator, 351 Ruggles Building, telephone 617-437-2440 or 617-437-2442.

Missed Final Examination Fee

Students absent from the regularly scheduled final examination at the end of a course may petition for a missed final examination. The fee for each examination requested by the student is \$50. The fee must be paid when the petition is filed in the Office of Academic and Student Affairs.

Transcripts

Students may request official transcripts of their grades at the Registrar's Office. There is a charge of \$2 per copy, payable in advance. Unofficial transcripts are issued free of charge.

Financial Aid

The Office of Financial Aid, located in 254 Richards Hall, offers several types of assistance to part-time students. All awards are based on financial need. Aid granted from programs sponsored by the federal or state government is dependent upon the amount of funding allocated to Northeastern University. The University does not award financial assistance in any form to students who are not citizens or permanent residents of the United States. All part-time students who wish to apply for financial aid and who have not declared a major (been admitted to a program) must complete an application, available at the University College Office of Academic and Student Affairs, 180 Ruggles Building.

Satisfactory Academic Progress for Financial Aid Recipients

Recipients of financial aid are required to make satisfactory academic progress in order to continue their eligibility for aid. University College defines "satisfactory academic progress" as

- a minimum course load of six credit hours per quarter (requirements vary for the Massachusetts Part-time Grant Program, the Massachusetts State Scholarship, and the Adult Learners Program); and
- a minimum average of C, or 2.0, in these courses.

If, at the end of any given academic year, a student receiving financial aid has failed to make satisfactory academic progress toward his or her degree, the Office of Financial Aid will be notified by University College.

Pell Grant

The Pell Grant Program is a federal aid program designed to provide financial assistance to degree candidates who need it to attend post-high school educational institutions. To be considered for a Pell Grant you must

- be enrolled in a degree or certificate program that is at least six months in length;
- be taking at least six credit hours per quarter;
- be a U.S. citizen or eligible noncitizen; and be achieving satisfactory academic progress;
- have not already received a bachelor's degree.

To apply for a Pell Grant, you must submit either a Financial Aid Form (FAF) or an Application for Federal Student Aid to the proper agencies; forms are available in the Office of Financial Aid.

In order to receive a Pell Grant, you must submit to the Office of Financial Aid, a valid Student Aid Report (SAR) and a Northeastern University Aid Application (available in the Office of Financial Aid). The amount of your Pell Grant will be determined by the following:

Quarter Hours Taken	Funding
0-5 quarter hours	No funding
6-8 quarter hours	Half-time award
9-11 quarter hours	Three-quarter time award
12 or more quarter hours	Full-time award

Pell Grant recipients should direct all questions to the Pell Grant section of the Office of Financial Aid, 275 Richards Hall, telephone 617-437-3804.

Massachusetts Part-Time Student Grant Program

The Massachusetts State Legislature has established a grant program for part-time students. These funds, earmarked for Massachusetts part-time students *only*, provide a maximum grant of \$1,000 per year.

To be eligible, the student must be a permanent legal resident of Massachusetts for at least one year prior to the opening of the academic year, and be a U.S. citizen or eligible noncitizen. He or she must also be enrolled in at least 3 but fewer than 12 quarter hours per academic term.

Students who are not enrolled in a degree or a certificate program or who already have a bachelor's degree are eligible for not more than 15 quarter hours of aid. In all cases the amount of the award will not exceed the cost of tuition, books, and fees.

Awards will be based on financial need demonstrated through the Financial Aid Form (FAF) and the Northeastern University Aid Application. The FAF must be mailed to Princeton, New Jersey for processing. The completed Northeastern University Aid Application must be returned to the Office of Financial Aid.

Applications are available in the Office of Financial Aid, 254 Richards Hall.

Massachusetts State Scholarship

Massachusetts residents enrolled as full-time students (i.e., those taking 12 credit hours per quarter for fall, winter, and spring) may be eligible for a Massachusetts State Scholarship. To apply, students must submit the Massachusetts version of the Financial Aid Form (MFAF). The priority date for submitting the MFAF is May 1. Massachusetts State Scholarships are awarded based on need as determined by the Massachusetts Financial Aid Form (MFAF).

Adult Learners Program

The Massachusetts Board of Regents of Higher Education has established the Massachusetts Adult Learners Program as a need-based, state-funded, financial aid program designed primarily to assist Aid for Dependent Children (AFDC) recipients in obtaining a college education. The amount of each award varies depending on the applicant's demonstrated need. The maximum award is the same as the Massachusetts State Scholarship.

To be considered for the program, students must follow the same application procedures as outlined under the Massachusetts Part-Time Grant Program. The same Massachusetts residency requirements apply. Applicants may be eligible as a full or part-time undergraduate student (enrollment in at least one three quarter-hour course). Awards are made only to current AFDC recipients.

Stafford Student Loan Program

The Stafford Student Loan Program (formerly the Guaranteed Student Loan Program) enables a student to borrow a maximum of \$2,625 per academic year during the freshman and sophomore years (first and second grade levels) and up to \$4000 per academic year for subsequent grade levels directly from a participating lender in the student's home community. The loan is guaranteed by a state or private nonprofit agency and is insured by the federal government. The interest on the loan is paid by the federal government while the student is in school and is subsidized during repayment after the student has left school. This loan must be repaid.

Students may be eligible for a loan if they are enrolled or have been accepted for enrollment on at least a half-time basis in a degree

or certificate granting program, are citizens or permanent residents of the United States, and can show financial need in accordance with the federal guidelines. The actual amount a student may be allowed to borrow will be dependent upon a review of the student's financial situation and the cost of the student's academic program.

The legal maximum loan that can be borrowed through the Stafford Student Loan Program for an entire undergraduate program is \$17,250.

In order to have a Stafford Student Loan application processed by the Northeastern University student loan office, part-time undergraduate students must have a Northeastern Part-Time Aid Application on file with the Office of Financial Aid and have submitted a Financial Aid Form to the College Scholarship Service prior to submitting the loan application for processing.

Repayment of a Stafford Student Loan usually begins six months after a student withdraws or graduates from an educational institution or ceases to carry at least a half-time course load. The repayment period may be as long as ten years. The amount of the payments depends upon the size of the debt, but must be at least \$50 per month. During the first four years of repayment the loan carries a simple interest rate of 8 percent per year and 10 percent thereafter.

Note: For students who have outstanding loans at 7 percent or 9 percent, the interest rate on subsequent loans will continue at the same rate.

Repayment on loans may be deferred under certain circumstances. For details contact your lender.

Students who borrow funds through this program must report any of the following changes to their lenders:

- withdrawal from school
- transfer to another school
- reduction of course load to less than half time
- change of address or parents' address
- change of name.

Additional information about financial aid is available from the Office of Financial Aid, 254 Richards Hall, 617-437-3190.

All federal financial aid programs are subject to change depending on adequate and continuing federal support.

Scholarships

The following University College and School of Engineering Technology scholarships and awards are available to students who have been accepted as degree candidates and are in good academic standing.

Scholarships are awarded once a year by the Scholarship Committee. Final selection of scholarship recipients is usually made in late May, followed by the awarding of the scholarships in late June or early July. Funds are usually applied to tuition expenses for the following academic year. Awards range in amount from \$250 to \$700.

Application Procedure

In January, a mailing list of students who have requested applications is prepared and applications are mailed out with the stipulation that they be completed and returned to the Office of the Dean by March 31. A student can be placed on the January mailing list by calling 617-437-2400 and leaving his or her name, address, and student ID number with the receptionist.

Dean Kenneth W. Ballou Family Scholarship Fund

The Dean Kenneth W. Ballou Family Scholarship Fund was established in 1986 by the generosity of the Kenneth W. Ballou family. Dean Ballou served Northeastern University in various capacities from 1957 to 1978, including as Director of Undergraduate Admissions, Dean of University Relations, Assistant to the President, Dean of Adult Education Programs, and dean of University College. This scholarship is awarded annually to a University College student(s) who demonstrates financial need, academic promise, and leadership potential.

James A. Buczel Memorial Scholarship University College

This scholarship was established in 1988 in memory of James A. Buczel, who received his Associate in Science degree in 1978. The endowment funds were provided by the family, friends, and associates of Mr. Buczel who was a member of the U.S. Customs Service of the Department of the Treasury. He lost his life in the line of duty while inspecting cargoes on

Sunday, October 9, 1988 in New Haven, Connecticut. The income from this memorial scholarship fund is to be awarded to undergraduate students in University College who are majoring in Law Enforcement and demonstrate financial need, academic promise, and soundness of character.

Dorothy G. Cooley Scholarship

This scholarship was established in 1988 by Dorothy G. Cooley, a 1960 graduate of the evening division of The School of Business, now University College. The income from this fund is to be awarded to responsible women students who are candidates for a bachelor's degree and who have demonstrated soundness of character and who have above average scholastic ability.

Henry J. Doherty Memorial Scholarship

The Henry J. Doherty Memorial Scholarship Fund was established in 1987 through the generosity of Doris R. Doherty, as a tribute to her late husband, a 1953 graduate of the Evening School of Business and a successful business leader in the field of legal publishing. The income from the scholarship is awarded annually to deserving students with demonstrated financial need who are pursuing part-time evening study and have been accepted as degree candidates.

Electronics Industries Personnel Association Scholarship

This scholarship was established in 1980 through the generosity of the Electronics Industries Personnel Association. The income is awarded annually to one or more students whose studies, to a significant extent, are in the field of human resources management at University College. Recipients shall demonstrate financial need, soundness of character, and academic stability.

Vincent A. Forte Memorial Scholarship

This scholarship was established in 1985 in memory of Vincent A. Forte, a graduate of Northeastern University. The endowment funds were provided through the generosity of his family, friends, and associates. Forte was an ambitious student pursuing a full-time business career while attending school part-time. He received an associate's degree from Lincoln Institute in 1957, a Bachelor of

Business Administration degree in 1958, and a Master of Business Administration degree in 1967. The income from this fund is awarded to undergraduate students in University College who are pursuing a bachelor's degree in business, who demonstrate financial need, and who are maintaining a cumulative quality-point average of 3.0 or better after completing at least 44 quarter hours of credit.

Kappa Tau Phi Scholarships

The Kappa Tau Phi Sorority Scholarship Fund annually makes scholarship awards available to women students in the science, business, engineering, and liberal arts programs who rank highest at the end of the upper-middle year. In the event that the chosen student is eligible for an award of greater monetary value, the award is made to the next highest-ranking woman student. To be eligible for this scholarship, the student must be enrolled in a course meeting at least two evenings per week and must be a candidate for a bachelor's degree. In determining the recipient, grades of all courses completed in prior years are considered.

Martin Luther King, Jr. Scholarships

This scholarship fund was established in 1969 in memory of the late Reverend Martin Luther King, Jr. Awards are made, as openings occur, to a limited number of adults from minority groups who would otherwise be unable to continue their education. Stipends can cover tuition expenses not to exceed six quarter hours in any academic quarter (excluding summer quarter). Northeastern University's Office of Financial Aid, located in 254 Richards Hall, administers these scholarships.

Alan A. and Shirley A. Mackey Scholarship Fund

The Alan A. and Shirley A. Mackey Scholarship Fund was established in 1987 upon the retirement of Alan A. Mackey from Northeastern University. Dean Mackey served Northeastern University in many capacities: as Dean of Administration, University Registrar, Dean of Continuing Education, and as a member of the mathematics faculty of University College. The scholarship fund provides annual scholarship awards to deserving University College students.

Timothy F. Moran Scholarship Fund

This scholarship fund was established upon the retirement of Dean Timothy F. Moran, Associate Dean at University College and Director of the Law Enforcement programs. During his second career as an educator, Dean Moran, a retired state police officer, was an innovator and leader in the education of law enforcement officers both in New England and throughout the world. His former students, colleagues, and friends made substantial contributions to establish this fund in his honor. This scholarship is awarded annually to students majoring in policing, security or corrections who demonstrate academic excellence and financial need.

William J. McGovern Memorial Scholarship

The William J. McGovern Memorial Scholarship was established in 1978 by an anonymous donor to honor the memory of William J. McGovern. The donor wishes to assist others in realizing their potential through higher education. The income from this scholarship benefits worthy undergraduate students actively pursuing studies in University College or the School of Engineering Technology. Recipients must have declared a major, demonstrated financial need and academic achievement, and exhibited a high level of professional promise.

Professor Joseph A. Mullen Scholarship

The Massachusetts Chapter of the American Society for Training and Development has established a fund to provide annual scholarship awards to deserving part-time students upon the recommendation of the Dean of University College.

Eva Needle Memorial Scholarship

The Eva Needle Memorial Scholarship Fund was established in 1965 with the aid of the Norman Knight Charitable Foundation and is maintained through the generosity of the friends of Bob and Ted Needle in memory of their mother. The income from the fund is awarded annually to a deserving student in the accounting program who demonstrates superior academic achievement. The recipient is selected jointly by Ted Needle, a long-standing member of University College's accounting faculty, and the Scholarship Committee.

Nancy Lee Patterson Memorial Scholarship

This fund was established in 1988 by the family and friends of Mrs. Nancy Lee Patterson at the time of her death. Income from the fund is awarded annually to female students, age 35 or over, attending University College who demonstrate financial need, soundness of character, and academic stability.

Harry Olins Memorial Scholarship

The Harry Olins Memorial Scholarship Fund was established as an expression of a belief in University College students and "what they stand for." The fund, presented by Mrs. Olins in recognition of her husband's long service on the business faculty, makes available an annual tuition award to students who, in terms of scholastic achievement, character, and personal need, best typify the spirit of Northeastern University. To be eligible for this award, the student must be a business administration degree candidate and carry a full academic load during the school year.

Sigma Epsilon Rho Honor Society Scholarship Award

The Sigma Epsilon Rho Honor Society Scholarship Award, established in 1974 by the membership of the Society, is awarded annually to undergraduate students of University College or the School of Engineering Technology. Eligible students must have a cumulative quality-point average of 3.0 or better after completing 75 percent or more of their required studies.

H. Patricia Taylor Scholarship Fund

The H. Patricia Taylor Scholarship Fund was established in 1974 by H. Patricia Taylor, a graduate of University College, and her husband, Harry C. Taylor, a graduate of the School of Business. The scholarship expresses their appreciation for financial assistance made available to Mrs. Taylor when she was obtaining her degree and is an attempt to provide similar funds to assist others in realizing their potential through higher education. The income from the fund is awarded annually to a student enrolled in University College or the School of Engineering Technology who demonstrates financial need and academic stability and who meets certain other conditions of eligibility.

Transportation Club of New England Scholarship

The Transportation Club of New England provides approximately eight scholarships annually for persons employed in transportation and industry traffic departments. Scholarships are applicable toward tuition, books, and incidental expenses involved in transportation management courses. The club's purpose is to afford a limited number of people an opportunity to expand and improve their education by systematic study of transportation and distribution management. Scholarships are administered cooperatively with the Scholarship Committee of the Transportation Club of New England. Applications may be secured from and filed with Frank Smith, Secretary, Transportation Club of New England, P.O. Box 121, Reading, MA 01867. Each applicant must be sponsored by a member of the Transportation Club.

U.S. Navy Field Training Supervisors Association Memorial Scholarship

A scholarship fund has been established through the generosity of the U.S. Navy Field Training Supervisors Association in commemoration of the Association's deceased members. The scholarship is awarded annually to a deserving student, selected by the Scholarship Committee, who is a management major working toward a bachelor's degree in the evening program at University College.

University College and the School of Engineering Technology Faculty Society Memorial Scholarship Awards

The Faculty Society of University College and the School of Engineering Technology offer two awards annually, primarily for excellence in studies, to bachelor's degree candidates in University College and the School of Engineering Technology who have carried and are currently carrying a minimum of twenty-four quarter hours annually. Applications, available during the winter quarter, must be returned before the spring quarter. These awards are given in commemoration of the Faculty Society's deceased members.

Roberta Macycove Wasserman Memorial Scholarship

This scholarship was established in 1976 through the generosity of family members and friends of Roberta Macycove Wasserman, who, at the time of her death in 1975, was pursuing liberal arts studies within University College. The income from the fund is awarded annually to a deserving female student who is a homemaker with family responsibilities and who is pursuing part-time studies within University College. The recipient shall demonstrate financial need, soundness of character, and academic stability.

Awards

John W. Robbins Prize

The John W. Robbins Prize was established in 1984 under the terms of the will of the late Lena C. Robbins, in memory of her husband, John W. Robbins, an alumnus of Northeastern University. The income from this memorial gift is awarded annually to the outstanding student (Class Marshall) of the graduating class of University College.

Facilities and Resources

Sport, Dance, and Exercise Facilities

Northeastern University is concerned with providing for the health and fitness of our students, and we continually expand the sports, exercise, and recreational options. All part-time students have access to our extensive gymnasium facilities from 4:00 p.m. to 9:30 p.m., Monday through Friday, and during all open hours on Saturday, Sunday, and holidays. The University offers you a variety of specialized facilities, including basketball courts, dance studio, indoor athletic field and running track, gymnastics room, combatives room, weight-training rooms, swimming pool, crew practice tank, racquetball courts, and motor performance and exercise physiology laboratories. The Matthews Arena, with seating for more than 5,000 fans, is home to the University's varsity and subvarsity hockey and basketball teams.

For organized athletics requiring facilities not available on the main campus, Northeastern maintains the Northeastern Boat House, which is located on Memorial Drive in Cambridge and is home to the University's crew teams. The Edward S. Parsons Field, on Kent Street in Brookline, is the playing ground for the football, baseball, women's lacrosse and women's field hockey teams, and some intramurals. The Bernard M. and Jolane Solomon Track, a recently completed outdoor track and field facility in Dedham, has an eight-lane, Action Trak 200 running surface and expansive areas for concurrent jumping and field events. This new facility is ready to host dual and championship meet competitions and is a permanent site for Northeastern University track athletes.

You must present a valid Northeastern student identification card and a photo identification card for access to the facilities.

Social and Professional Clubs

We welcome and encourage part-time students in University College and the School of Engineering Technology to join in the social and professional activities that are organized and run by the student body, with the assistance of the Office of Academic and Student Affairs. If you and your peers are interested in starting new professional clubs, local or national, the office will help to plan and organize. Call 617-437-2400 for more information.

All programs are designed to keep pace with changing student needs and interests and to provide maximum opportunity for your participation.

Sigma Epsilon Rho Honor Society

Sigma Epsilon Rho is the University College honor society. It aims to promote fellowship among those students who have attained highest scholastic standing in the College; to stimulate the student body to higher scholastic accomplishment through the bearing, influence, and work of those selected men and women; to develop methods of mutual improvement and advancement among members; and to support high moral, professional, and scholastic ideals.

Only honor graduates or seniors with honor standing at the end of their junior year are eligible for admission to the Society. Admission is by invitation after nomination by the Society.

Ell Student Center

Student recreation and extracurricular activities of all kinds are held at the Carl S. Ell Student Center. The center houses the Blackman Auditorium, which seats 1,300; special drama facilities; a ballroom; a main lounge; fine arts exhibition space; student offices; conference rooms; a cafeteria with seating for more than 1,000; and a bookstore.

Office of Services for the Handicapped

No student should miss or have diminished opportunities at Northeastern University. Any student who has a disability-related need, no matter how small or individual, can receive ready support services from the Office of Services for the Handicapped (OSH). Fre-

quently, students are uncertain about how they may be helped by this office; in these situations, a discussion of possible alternatives is useful. OSH provides a range of support services to eliminate the competitive disadvantages that a disability may create. Services are tailored individually to meet the needs of each student.

Types of assistance available from OSH include providing help during orientation, registration, and preregistration; offering information and counseling; arranging for housing, and services for the hearing-impaired, the wheelchair user/mobility-impaired, and learning disabled student.

OSH is also the gathering place for the Disabled Student Organization of Northeastern University, which works cooperatively with OSH to plan programs and improve accessibility of services for handicapped people at Northeastern.

Lane Health Center

The well-being of all Northeastern students is a crucial concern for the University. The health services clinic of the Lane Health Center, located on the Boston campus, is equipped to deal promptly with medical emergencies at all times.

Alumni Association

Upon graduation, you will join the more than 93,000 alumni united within the Alumni Association, which was established to promote a mutually rewarding relationship between Northeastern and its graduates. Association activities include the Homecoming celebration, presentation of the Outstanding Alumni Awards, and the annual presentation of Professional Promise Awards to outstanding seniors in each of the colleges.

About Northeastern University

Profile of the University

At Northeastern University, we value part-time day and evening students as highly as we do our full-time students. You are important members of the academic community and reflect the changing profile of today's college student, which encompasses new concerns for lifespan learning and professional retraining. Northeastern supports your pursuit of personal and professional goals and wants to contribute to your success. You may join all of our students in taking full advantage of the academic resources and facilities we offer. In return, you contribute to the intellectual and cultural diversity upon which this urban institution thrives.

Founded in 1898, Northeastern University is incorporated as a privately endowed, nonsectarian institution. From its beginning, the University's mission has been to identify and address the educational needs of a diverse community and student body in distinctive and useful ways. Northeastern did not duplicate the programs of other institutions, but instead became a world leader in new areas of educational service. In particular, the University is known for its Cooperative Plan of Education, under which students alternate periods of work and study. All of Northeastern's undergraduate day colleges operate on the Cooperative Plan, and several of the University's graduate schools have structured their programs to include features of cooperative education. Today, the University is comprised of nine undergraduate colleges and nine graduate schools.

Our undergraduate colleges are:

- Boston-Bouvé College of Human Development Professions
- College of Arts and Sciences, including the School of Journalism
- College of Business Administration
- College of Computer Science
- College of Criminal Justice
- College of Engineering, including the School of Engineering Technology
- College of Nursing
- College of Pharmacy and Allied Health Professions

Our graduate schools are:

- Graduate School of Arts and Sciences
- Graduate School of Boston-Bouvé College of Human Development Professions
- Graduate School of Business Administration
- Graduate School of Computer Science
- Graduate School of Criminal Justice
- Graduate School of Engineering
- Graduate School of Pharmacy and Allied Health Professions
- Graduate School of Professional Accounting
- School of Law

At Northeastern University, we respond to the needs of people who already hold jobs or are launched in careers, but who wish to advance or change their professional lives as well as pursue personal interests. The University offers a variety of educational options—both credit and noncredit—to suit your particular objectives. University College offers part-time courses leading to certificates and to associate's and bachelor's degrees. The School of Engineering Technology offers part-time evening and weekend associate's and bachelor's degree programs in technological areas, in addition to daytime undergraduate programs.

All formal courses of study leading to degrees through part-time programs are approved by the full-time day faculty of the Northeastern Basic Colleges concerned and are governed by the same qualitative and quantitative standards.

Where You'll Find Northeastern

The main campus of Northeastern University is a vibrant and progressive urban community. To all Northeastern students, the physical setting of the Boston campus extends opportunities to participate in the dynamic, exciting environment that we share with city residents. Built around a quadrangle, the campus is divided by Huntington Avenue, a major artery. It is located in the midst of such cultural landmarks as Symphony Hall, the Museum of Fine Arts, the Isabella Stewart Gardner Museum, Horticultural Hall, and the Boston Public Library. You can walk to Fenway Park, Copley Place, the Back Bay shopping district, and a number of internationally renowned hospitals. In 1910, the University began construction on the first piece of land acquired at its present site; it now covers more than fifty-five acres.

To reach increasing numbers of students and to make participation in our programs as convenient as possible for you, Northeastern University has established suburban campuses and branch locations, as well as several off-campus athletic facilities. The campuses and branch locations house administrative and classroom facilities for Northeastern's graduate, part-time day and evening, and continuing education programs. The University also maintains many affiliations to ensure access to facilities and specialized equipment available at other institutions and organizations.

One of Northeastern's most recent acquisitions is the twenty-acre Dedham campus, just north of Route 128. This facility houses the Center for Continuing Education and provides space for the College of Business Administration's High Technology MBA program.

Near the junction of Routes 128 and 3 in Burlington is the Suburban Campus of Northeastern University. Part-time undergraduate courses in a variety of subject areas and part-time graduate courses in engineering and business administration are offered here. The Burlington campus also offers special programs for part-time, evening, and noncredit continuing education courses.

Located near the Burlington campus, the Botanical Research Station in Woburn contains a small arboretum and a spacious greenhouse for propagation and research.

Situated on fifty acres in Ashland, the Warren Center provides a practical laboratory for outdoor education and conservation, and camping administration, programming, and counseling. In the summer, the center becomes an attractive campsite for various community and University groups and is available for conferences and workshops.

Twenty miles northeast of Boston, the Marine Science and Maritime Studies center is located in Nahant, on Massachusetts Bay. It serves as a site for national, international, and University research.

Henderson House, Northeastern University's conference center, is located twelve miles from Boston in suburban Weston. This facility hosts a variety of activities, including residential seminars, workshops, short courses, and weekend meetings.

University Libraries

As a reflection of our serious commitment to part-time students, you have access to all seven of the University's extensive library units. Located on the Boston campus is Dodge, Northeastern's main library facility, and three libraries that house graduate-level collections in chemical and biomedical science, mathematics and psychology, and physics and electrical engineering. There are also libraries on the Burlington and Dedham campuses and at the Marine Science and Maritime Studies Center in Nahant.

Total holdings of all University libraries include the equivalent of more than one million volumes in print and in microform; 5,000 periodical titles; 300,000 government documents; and 24,000 items in audiovisual and computer software formats. In Dodge, the Learning Resources Center provides computer-assisted instruction, microcomputer facilities, and language and music listening laboratories. The center also houses an extensive set of self-paced media materials in various interactive formats, including audiotapes, videotapes, and computer-assisted lessons and exercises.

Northeastern University's membership in the Boston Library Consortium generally entitles our students to on-site use of libraries at Boston and Wellesley Colleges, the Massachusetts Institute of Technology, the State Library of Massachusetts, the University of Massachusetts (Amherst, Boston, and Worcester campuses), and Boston, Brandeis, and Tufts Universities.

Academic Computer Services

Northeastern's Academic Computer Services supports the learning activities of students at all levels, as well as the teaching and research undertaken by faculty, research personnel, and graduate students. The programming assistance offered at the Boston, Burlington, and Dedham campuses promotes effective use of all academic computer systems. At these three campuses 270 assorted personal computers are linked in local-area networks. Via a wide-area network, students and faculty

have time-sharing access to five large computers through video and hard-copy terminals arranged in clusters at the three campuses. This network connects a Digital Equipment Corporation VAX 8650 system plus an additional VAX 11/785 and a Data General MV/8000. A variety of graphics and output devices are available.

Electronic spreadsheet and word-processing packages are available to you, in addition to many software libraries for numerical, statistical, and financial applications. The primary languages supported by Academic Computer Services are FORTRAN, COBOL, BASIC, Pascal, and Assembler.

Research

Research, whether performed in the laboratory, library, or field, is vital to maintain the University's thriving academic atmosphere. Through research, faculty members and students stay abreast of the most recent developments in their particular fields. Every department of every college at Northeastern carries out some basic or applied research projects.

At Northeastern University, research and scholarship are taken very seriously and are actively encouraged. Each year faculty members receive funding for an ever-increasing number of research projects, for which sponsorship comes from a variety of sources. Federal agen-

cies, private industry and foundations, and the university itself all contribute to Northeastern's growing research base.

Although much of this research is carried out by faculty members, their graduate students, and post-doctoral research associates, ample opportunities exist for undergraduate students. Research participation can take place as part of regular academic programs, as specially designed independent studies, or through cooperative work assignments. Research activities are encouraged and are limited only by the student's own motivation and curiosity.

Northeastern University's faculty has numerous distinguished scholars, many of whom have received prestigious awards, including Sloan Scholarships, Guggenheim Fellowships, and National Institute of Health Research Awards. Faculty members lecture worldwide and publish extensively; through these efforts the faculty enhance their teaching and help to ensure an exemplary university education.

In addition, many faculty serve as U.S. government consultants and participate on a variety of national and international committees. But because Northeastern considers education its primary mission, students will always find an enthusiastic and accessible faculty to answer questions, solve problems, and stimulate inquiring minds.

Programs at Northeastern

Undergraduate Colleges

Boston-Bouvé College of Human Development Professions

Offers programs leading to the Bachelor of Science in Education in early childhood education, elementary education, human services, physical education, athletic training, cardiovascular health and exercise, and school and community health education; the Bachelor of Science in Recreation and Leisure Studies; and the Bachelor of Science in Physical Therapy. For more information, call 617-437-2200.

College of Arts and Sciences

Offers programs in the visual and performing arts, humanities, social sciences, and mathematics/sciences leading to the Bachelor of Arts and Bachelor of Science degrees. Programs are normally four years in length on a full-time plan or five years in length on the cooperative plan. For more information, call 617-437-3980.

College of Business Administration

Offers a five-year, cooperative education program leading to the Bachelor of Science in Business Administration. Students complete a concentration in accounting, human resources management, marketing, finance and insurance, management, international business administration, entrepreneurship and new venture management, management information systems, or transportation and physical distribution management. For more information, call 617-437-2200.

College of Computer Science

Offers a five-year, and a four-year cooperative education program leading to the Bachelor of Science in Computer Science, with emphasis tracks in data-base management, programming languages, and systems. For more information, call 617-437-2462.

College of Criminal Justice

Offers a five-year, cooperative education program leading to the Bachelor of Science degree. For more information, call 617-437-3327.

College of Engineering

Offers four- and five-year cooperative education programs in chemical, civil, electrical (including a power systems option and a computer engineering option), industrial, and mechanical engineering leading to the Bachelor of Science with specification according to the department. A more general program leading to the Bachelor of Science without specification is also offered. For highly qualified students, the electrical and computer engineering, mechanical engineering, and industrial engineering and information systems departments offer five-year programs leading to the bachelor and the masters degree; students carry course overloads beginning in the third year. The College also offers a six-year, part-time evening program leading to the Bachelor of Science degree in civil, electrical, or mechanical engineering. For more information, call 617-437-2154.

College of Nursing

Offers five-year cooperative education program leading to the Bachelor of Science in Nursing. The College also offers an R.N. to B.S.N. option to registered nurses who wish to pursue a baccalaureate degree in nursing. The R.N. to B.S.N. option is offered for full-time students by the College of Nursing and for students desiring part-time evening study in collaboration with Northeastern University's part-time unit University College. The program is accredited by the National League for Nursing. For more information call 617-437-3610.

College of Pharmacy and Allied Health Professions

Offers five-year, cooperative education programs leading to the Bachelor of Science in Pharmacy, Respiratory Therapy, and Toxicology, and to the Bachelor of Science with specification in medical laboratory science and health record administration. A non-cooperative four-year baccalaureate program is offered in Dental Hygiene. Associate's degree programs are offered in medical laboratory science and dental hygiene. The College also offers post-baccalaureate cer-

tificate programs for physicians assistants, health record administrators, respiratory therapists, perfusion technologists, and medical laboratory scientists (concentrations in blood banking, clinical chemistry, hematology, and microbiology). For more information, call 617-437-3321.

School of Engineering Technology

The School of Engineering Technology, a division of the College of Engineering, offers programs leading to the Associate in Engineering, Associate in Science, and Bachelor of Engineering Technology degrees. A full-time, five-year cooperative education plan is offered, at the baccalaureate level, in electrical and mechanical engineering technology and computer technology. In addition to the majors mentioned for full-time study, part-time evening and weekend programs are available at the associate and baccalaureate levels in telecommunications, energy systems, architectural, environmental, structural, and surveying and highway engineering technology. A baccalaureate degree program in aerospace maintenance engineering technology is available for transfer students, both full- and part-time. Many of the technology courses are televised via Network Northeastern to satellite campuses and company sites. For more information, call 617-437-2500.

Graduate Schools

Boston-Bouvé College of Human Development Professions

Offers a full- and part-time programs leading to the Master of Science degree with specialization in counseling psychology; exercise sciences; human resource counseling; physical education; recreation, sport, and fitness management; rehabilitation counseling; speech-language pathology and audiology.

The Master of Education degree may be earned with a specialization in counseling, consulting teacher of reading, curriculum and instruction, educational research, human development, rehabilitation administration, or special education. The Doctor of Education degree may be earned in leadership: administration and supervision, with a specialization in counseling, educational administration, or rehabilitation administration. For more information, call 617-437-2708.

College of Arts and Sciences

Offers programs leading to the Master of Arts degree in economics, English, history, journalism, political science, psychology, sociology, social anthropology, and writing. The Master of Science degree is available in biology; chemistry; economic policy and planning; law, policy, and society; mathematics; and physics. The Master of Technical and Professional Writing, the Master of Science in Health Science, the Master of Journalism in News Media Management, and the Master of Public Administration degrees are also offered. In addition, there are programs leading to the Certificate of Advanced Graduate Study in advanced literary study and to the Doctor of Philosophy degree in biology; chemistry; economics; law, policy, and society; mathematics; physics; psychology; and sociology. There are also certificate programs in economics of the workforce and development planning and in technical writing. Most programs may be completed through either full- or part-time study. For more information, call 617-437-3982.

College of Business Administration

Offers five programs leading to the Master of Business Administration (MBA) degree. Options include a cooperative education MBA program, a full-time MBA program, and a part-time MBA program. An executive MBA program tailored to the needs of experienced managers and a high-technology MBA program designed for professionals in the high-technology community are also offered on a part-time basis. Additionally, a nondegree program leading to the Certificate of Advanced Study is available. For more information, call 617-437-2714.

The Graduate School of Professional Accounting offers a full-time, fifteen-month Master of Science in Accounting program designed for students who hold bachelor's degrees in the arts and sciences. The program includes a three-month paid internship with a CPA firm. For more information, call 617-437-3244.

The Center for Management Development offers a variety of nondegree programs and graduate workshops, including the Management Development Program, the Management Workshop, and the Management Workshop-High Tech. For more information, call 617-437-3272.

College of Computer Science

Offers full- and part-time programs leading to the Master of Science in Computer Science with concentrations in artificial intelligence, communications and networks, data bases, systems software, and theory. The Doctor of Philosophy in Computer Science program includes theory, artificial intelligence, data base management, operating systems, programming languages, computers, and computer architecture and hardware. For more information, call 617-437-3539.

College of Criminal Justice

Offers both full- and part-time programs leading to the Master of Science in Criminal Justice. Criminal justice students may concentrate in administration, or develop their own multidisciplinary concentration under the supervision of a faculty adviser. For more information, call 617-437-3327.

College of Engineering

Offers programs leading to the Master of Science with specialization in chemical, civil, industrial, and mechanical engineering; electrical and computer engineering and; computer systems engineering. A five-year program leading to both a Bachelor and a Master of Science degree is offered in electrical, industrial, and mechanical engineering. Professional Engineer's degrees are offered in electrical, industrial, and mechanical engineering. The doctor of philosophy degree is offered in chemical, civil, electrical, mechanical and industrial engineering and information systems. A doctor of engineering is offered in chemical engineering. Women in Engineering and Women in Information Systems programs are also available. For more information, call 617-437-2711.

College of Nursing

Offers full- and part-time Master of Science in Nursing program. The master of science degree may be earned with a specialization in Community Health Nursing, Critical Care Nursing, Primary Care Nursing or Psychiatric-Mental Health Nursing. For more information, call 617-437-3102.

College of Pharmacy and Allied Health Professions

Offers programs leading to the Master of Science degree in biomedical science, hospital pharmacy, medical laboratory science,

medicinal chemistry, and pharmacology. The Master of Health Professions is offered with four options: general, health policy, physician assistant, and regulatory toxicology. A doctoral degree program is offered in biomedical science with specialization in medical laboratory science, medicinal chemistry, pharmaceutical sciences, pharmacology, or toxicology. A graduate program in clinical pharmacy leading to the Doctor of Pharmacy is also available. For more information, call 617-437-3211.

School of Law

Offers a full-time day program leading to the juris doctor degree. The three-year curriculum includes four quarters of work experience in judges' chambers, law firms, governmental agencies, and other legal settings. For more information, call 617-437-2395.

Division of Continuing Education

Northeastern University established continuing education programs over 25 years ago to provide quality, practical, career-related education in business and industry, consistent with the University's tradition of adult education. The mission of the Division is to be a leader in non-degreed continuing education for the career professional. Courses are taught primarily by practitioners in their respective fields. Program development, courses and seminars are based on market needs and wants, and are offered at convenient off-campus locations and at company sites. The Division continues to expand Northeastern University's regional and national reputation as a leader in continuing education via such technological advances as microwave and satellite transmission. For more information on the following programs, contact the Division office at 617-437-5828.

Network Northeastern

This service was developed to serve the needs of the high tech community with flexible education and training programs. Network Northeastern broadcasts live instruction from the Boston campus directly to the company sites and the Burlington and Dedham campuses. Live classroom instruction is telecast in color to these remote sites, where it is viewed in reception rooms equipped with television monitors and a telephone talk-back system. Videotapes of missed classes are provided, and a courier service delivers and collects

homework assignments and serves as a link to the registrar, bookstore, and other University services. Network Northeastern offers courses in graduate engineering, computer science, undergraduate engineering technology, the State-of-the-Art Program, and graphic arts. In 1987, Northeastern University became the first university in eastern Massachusetts to install a Ku-band satellite dish. This enables the University to broadcast courses throughout the United States and to redistribute live satellite programs to subscribing company sites via the microwave system. Via the satellite, Network Northeastern is a local distributor for IEEE videoconferences and other satellite providers. Network Northeastern studio facilities and experienced staff are available to produce high quality programming to respond to the need for efficient, timely education in today's rapidly expanding fields of knowledge. Call Network Northeastern at 437-5620.

Automobile Appraisal Program

The Automobile Appraisal Program is designed to prepare insurance claims professionals, auto body technicians, and other for the the Automobile Appraisal License Examination administered by the Commonwealth of Massachusetts. The program also offers training in efficient auto repair center management and an Automobile Claims Adjusting Course for instruction in the Massachusetts regulations. For more information, call 329-8000, ext. 47 or 24.

Test Preparation Program

The Test Preparation Program offers courses designed to help prepare students for the LSAT, GMAT, GRE, and SAT examinations, providing the participant with an in-depth exposure to the subject matter. Call 329-8000, ext 47 or 24 for more information.

Urban Mass Transit Program

The Urban Mass Transit Program is designed to help participants develop improved methods of meeting the unique challenges facing management personnel in the urban mass transportation industry. The program provides a means of getting a practical educational experience in modern management theory and practice. For information, call 329-8000, ext. 22.

Insurance and Financial Services Institute

Established to foster excellence in the insurance and financial services communities in the Boston area, the institute offers courses and seminars in general insurance, risk management, insurance licensing, and financial services. These study programs are designed to help students develop professional credentials and to keep professionals current in their field. Call the Institute at 508-533-5101.

State-of-the-Art Engineering Program

The State-of-the-Art Program offers evening courses, seminars, and on-site training designed for working professionals seeking practical, hands-on education in a job-related area of technology. The curriculum includes CAD/CAM, high-level computer languages, VLSI design and certificate programs in: data communications, industrial automation, telecommunications, microelectronics/semiconductor science, artificial intelligence, quality assurance, software engineering and technology management. Call the State-of-the-Art Program 329-8775.

Building Technology Program

The program is designed for a broad spectrum of professionals either presently in or considering some aspect of the building technologies. The course offerings in the Building Technology Program range from introductory to advanced and are conducted in an intensive, total-immersion setting. Evening courses, on-site training and seminars cover areas such as architecture, construction law and management, fire protection, general construction, engineer-in-training license examination preparation and Massachusetts's electricians code review. Certificate programs are offered in: HVAC systems design, facilities management, construction superintendent, building inspections, building technology and real estate studies. Call the Building Technology Program at 329-8000.

Paralegal Program

The Paralegal Program offers a twelve-week Paralegal Certification Program and Specialist courses offer training on specific legal topics for any business professional needing to develop expertise. Call 329-8000, ext. 47 or 24 for information.

Faculty

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Northeastern University

Barbara Abeles, M.B.A.

Management
Abeles Associates

Kimiko Abramoff, M.A.

Modern Language
Prime Computer

Hon. Herbert Abrams, M.L.*

Criminal Justice and Security
Superior Court of Massachusetts

Michael J. Abruzzese, M.B.A.*

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University of Massachusetts
Medical Center

Deborah A. Adair, M.S.

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Elliott Hospital

Stephen D. Adair, M.A.

Sociology/Anthropology
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Henry Adleman, B.S.*

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Digital Equipment Corp.

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Elkay Products, Inc.

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Silver and Ahern

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Bedford VA Hospital

Fariba Aliloo, M.S.

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City of Cambridge

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Carlson Metalcraft Company, Inc.

Israel Aluf, Ph.D.*

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Hotel and Restaurant Management
Katherine Gibbs

Craig A. Andersen, B.S.

American Sign Language
Self-Employed

Janis L. Anderson, Ph.D.

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Art
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Regis College

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Bolt Beranek and Newman

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Home Care Group, North Shore

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Virginia Ayoob, M.A.

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Worcester Polytechnic Institute

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Rural Housing Improvements

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Puopolo & Carr, P.C.

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Harvard University and
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Criminal Justice and Security
Massachusetts Criminal Justice
Training Council

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Regional Health Center,
Wilmington

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Chuzi Corporation

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Bridgewater State College

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Westlyn Creamery

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Digital Measurement Systems

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Occupational Analysis

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Leonard M. Conlin, Sr., M.Ed.*

Mathematics

Framingham North High School

John F. Connelly, Ph.D.

Information Systems

Boston Edison Company

Thomas F. Connerty, B.A.

Information Systems

Prime Computer, Inc.

Joseph N. Connors, M.P.A.*

Political Science

Liberty Security

Louis E. Conrad, M.S.

Journalism

Northeastern University

John Conway, M.A.

Technical Communication

Jack Conway Associates

James Cook, A.B.

Management

Northeastern University

Lindsay Cook, M.S.

Accounting

Liberty Mutual Insurance Group

Ellen M. Cooney, M.A.

English

Self-employed

Ronald P. Corbett, Jr., M.S.

Criminal Justice and Security

Massachusetts Trial Court

John S. Corcoran, M.S.

Technical Communication

Verne J. Cordova, H.S.D.

Art

Northeastern University

Peter V. Corea, Ph.D.

Psychology

Emerson College

Norma Corey, E.D.

Alternative Freshman/Language

Skills

Steven H. Cornelius, M.A.

Music

Self-employed

Dyer Cornell, M.B.A.*

Finance

Bank of Boston

Richard S. Corrente, M.B.A.*

Management

Raytheon Company

Leon L. Cort, Ph.D.

Political Science

Edward V. Cosgrove, Ph.D.*

Biology

Commonwealth of Massachusetts

James W. Cottom, M.A.*

History

Massasoit Community College

William J. Coughlin, M.A.

Art

Blue Hills Regional Technical
Institute

Robert F. Couture, B.A.

Music

Thomas F. Coveney, M.B.A.*

Information Systems

Stone & Webster Eng. Corp.

Wallace Coyle, Ph.D.

English

University of Massachusetts

Carol A. Crane, M.S.

English

Self-employed

Steven Crapser, B.A.

Purchasing

The Kendall Company

Bryan D. Craven, B.S.

Information Systems

General Electric Company

Salvatore A. Crisafulli, M.B.A.*

Information Systems

Commonwealth of Massachusetts,

Department of Public Welfare

Robert D. Crofts, M.A.*

Economics

Salem State College

John F. Cronin, Jr., M.B.A.*

Accounting

Raytheon Company

Joseph V. Cronin, Jr., J.D.*

Business Law

Massachusetts Trial Court

Joseph W. Cronin, B.S.*

Management Sciences

Cal Company

Mary A. Cronin, M.B.A.

Human Resources Management

Commonwealth of Massachusetts

Personal Administration

Hugh J. Crossland, LL.M.*

Accounting

Ross Crossland Weston and
Company

Bernard Crowley, M.B.A.

Finance

Putnam Investment

Brian C. Crowley, M.B.A.*

Accounting

Graftel Systems Inc.

Mark D. Crowley, M.B.A.

Accounting

Autex Systems, Inc.

Patricia L. Culbert, M.F.A.

Drama

Dean Junior College

David M. Culver, Ph.D.*

History

Bridgewater State College

Edmund Cuoco, B.A.

Technical Communication

Lexicon, Inc.

Helen M. Curley, M.A.*

Criminal Justice and Security

Victor A. Curran, B.A.

Art

D.C. Heath

Joan Curtice, M.A.

Human Resources Management

Micrion Corporation

Robert S. Curtin, Ed.D.

History

Northeastern University

John J. Curtis, M.A.

Music

Emerson College and Northeastern
University

Madelyn A. Curtis, M.A.

Music

Northeastern University

Roseann Cutroni, M.S.

Health Science

St. Elizabeth's Hospital

Albert C. D'Amato, M.Ed.*

English

Northeastern University

Miriam F. D'Amato, M.A.*

English

Professional Editorial Services

Patricia Dacey, M.Ed.

Women's Career Program

YWCA

Maria N. DaCosta, Ph.D.

Economics

Western New England College

Robert E. Daidone, J.D.

Business Law

Ricklefs, Uehlein & Son

Carol A. Dalto, Ph.D.*

Psychology

John Hancock

Bonnie S. Dann, B.F.A.

Art

Arnold E. Daum, B.S.*

Marketing

Arnold E. Daum Co.

Ann M. Davey, B.S.

Real Estate

Davey Associates

Ellen Davey, Esq., J.D.

Real Estate

Davey & Davey

Mary Davey, Esq., J.D.

Real Estate

Davey & Davey

Francis L. David, M.Ed.

Industrial Management

Digital Equipment Corp.

Edward S. Davidson, B.S.

Human Resources Management

Federal Labor Relations Authority

Lawrence J. Davis, M.B.A.

Information Systems

The Groton Group

Robert E. Davis, M.B.A.

Accounting

R.E. Davis and Assoc.

James D. Dawson, Ph.D.

Alternative Freshman/History

Robert De Vries, M.A.

Music

Self-employed

Bruce A. Dean, Ed.D.

Criminal Justice and Security

District Attorney, Middlesex

County

Lance M. Dean, M.A.

Alternative Freshman/English

Peter U. Decenzo, B.S.*

Mathematics

Ashland High School

Peter F. DeCosta, M.S.

Earth Science

United States Army

Paul DeCristofaro, M.B.A.

Accounting

P J C CPA

Joyce Delorey, M.A.

Alternative Freshman/Mathematics

Northeastern University

David A. Deluca, J.D.

Criminal Justice and Security

Murphy, Hesse, Toomey, & Lehane

John B. Deluca, J.D.

Business Law

Data General Corporation

Robert J. Dennehy, M.B.A.**Accounting*

Robert J. Dennehy, C.P.A.

Paul J. Derby, M.B.A.**Information Systems*

Honeywell, Inc.

Joseph B. DeRoche, M.F.A.**English*

Northeastern University

Stephen R. Derosier, M.B.A.*Management*

Northeastern University

Harry G. DeSalvatore, M.S.*Therapeutic Recreation*

New England Memorial Hospital

Ernest P. DeSimone, J.D.*Real Estate*

McNamara and DeSimone

Carl F. DeSisto, M.S.*Transportation*

Stone and Webster Engineering Corp.

Normand J. Des Marais, M.B.A.*Purchasing*

Honeywell

Margaret D. Devaney, M.Ed.*English*

Braintree High School

Peter B. Devaney, M.A.*Real Estate*

Comm Land Title Ins.

Richard K. Deveney, M.Ed.**Mathematics*

Jamaica Plain High School

James D. Devlin, B.S.*Marketing*

Digital Equipment Corporation

Emily Dexter, M.A.*American Sign Language*

Learning Center

Brian S. Dextrateur, B.S.**Management Sciences*

Polaroid Corp.

Joanne C. Di Francesco, M.B.A.*Marketing*

Mass Bay Community College

Jeffery E. Di Iuglio, M.A.*English***Francis J. Di Sabatino, M.A.****Chemistry*

Retired

Augusto Diana, M.A.*Sociology/Anthropology*

Northeastern University

Norma M. Diandrea-Alfonso, B.A.*Radiologic Technology*

University Hospital

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Daniel E. Dilorati, J.D.*Real Estate*

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Howard T. Dimmick, M.Ed.**Earth Science*

Town of Stoneham

Indralakshmi, Din-Dayal, M.Ed.*Speech Communication***Rosemarie M. Dittmer, M.A.****English***Judith R. Dituri, M.A.****English***Mark Domaszewicz, M.S.E.E.****Mathematics*

Raytheon Company

Frederick Donahoe, J.D.*Real Estate*

Donahoe Associates

Marie L. Donahue, M.A.*Criminal Justice and Security*

Boston Police Department

Diane M. Donatio, M.S.*English*

West Suburban Elder Services

Kathryn Donegan, B.S.*Information Systems*

Textron Defense System

Jane A. Donnelly, M.A.*Speech Communication*

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Rosemary T. Donnelly, Ed.D.*English*

Stratus Computer

Timothy R. Donovan, Ph.D.**English*

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Mast Industries

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Middlesex Community College

Ronald Draper, M.B.A.*Management Sciences*

Gillette

Joan F. Drexelius, Ph.D.**Speech Communication*

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William Driscoll, Ph.D.*Accounting*

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Boston Documentation Design

Diana E. Duarte-Constoch, B.A.*Art*

Transcriber Company Inc.

Edward L. Dube, M.B.A.**Management*

ELD Associates

Catherine Dube-Fortin, Ph.D.*Technical Communication*

Center for Alcoholic Studies

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Walter Martinson, C.P.A.

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A Keag Bank Shares, Inc.

Paula Duggan, M.S.A.*Accounting*

Federal Home Loan Bank

of Boston

Daniel T. Dunn, Jr., D.B.A.**Marketing*

Northeastern University

Laura W. Dunn, M.A.**English*

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Management

Emmanuel College

Douglas F. Durant, M.F.A.

Music

Northeastern University

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Business Law

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Commonwealth of Massachusetts

Barbara Dvorchak, M.S.

Mathematics

Northeastern University

William C. Dwyer, M.B.A.*

Management

William C. Dwyer Associates

Joann L. Dzink-Fox, M.S.

Health Science

Forsyth Dental Center

Carl W. Eastman, M.A.*

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Northeastern University

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Commonwealth of Massachusetts

Kathryn A. Efstathiou, B.A.

Information Systems

Judith R. Ehlen, M.A.

English

David M. Ehrmann, B.S.*

Speech Communication

Codex Corporation

Luckson E. Ejofodomi, Ph.D.

History

Abdelmoujib El-Mernissi, M.S.

Alternative Freshman/Mathematics

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Information Systems

Digital Equipment Corp.

Irene A. Elios, H.S.D.

Art

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Radiologic Technology

University Hospital

Louis J. Ennis, M.B.A.*

Human Resources Management

Brandeis University

Binnur Ercem, M.A.

Sociology/Anthropology

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Ali S. Errishi, Ph.D.

Philosophy/Religion

Fitchburg State College

Virginia Eskin, M.A.

Music

Northeastern University

Herbert J. Eskot, Ph.D.*

Economics

James A. Evangelista, B.S.

Health Science

Leonard Morse Hospital

Ugo E. Evangelista, M.S.

Mathematics

Revere School System

Richard P. Evans, M.Ed.

Human Resources Management

Management Collaborative

Anne C. Ewers, M.A.

Music

Boston Lyric Opera

Robert M. Fahey, M.Ed.*

Information Systems

Nixdorf Computer Corp.

Sheryl L. Fairchild, B.S.

Therapeutic Recreation

Malden Hospital

Eugene F. Fallon, M.B.A.*

Finance

GenRad, Inc.

Thomas J. Fallon, M.B.A.

Marketing

Digital Sales Associates

Edward J. Falvey, M.B.A.*

Management

Keystone Group

Ghodratallah Farahani, M.A.

Political Science

Boston University

Richard J. Faulstich, A.B.

Human Resource Management

Raytheon Company

Joseph R. Favaloro, M.B.A.

Finance

Bank of Boston

Trudi R. Feinstein, Ph.D.

Psychology

Eileen Feldman, M.A.

English

Self-employed

Indira E. Fernandes, M.S.

Biology

Northeastern University

George F. Ferrar, M.S.

Art

Art Institute

Elizabeth M. Ferrarini, M.S.

English

James F. Ferreira, M.B.A.

Information Systems

Technical Aid Corp.

James E. Ferrier, M.S.

Criminal Justice and Security

Northeastern University

James J. Ferriter, M.B.A.

Health Management

Industrial Medical Center

William A. Ferson, M.A.*

Economics

U.S. Department of Labor

George W. Fiddler III, M.B.A.

Accounting

Textron Corp.

Barbara Ann P. Filo, Ph.D.*

History

Bank of New England

William D. Finan, Ed.D.*

Mathematics

Charles A. Findley, Ph.D.*

Speech Communication

Francis X. Finigan, M.Ed.*

Mathematics

Retired

Joseph L. Finigan, M.Ed.

Mathematics

Reading Memorial High School

Frederick B. Fink, M.B.A.

Marketing

Kenneth Finkelstein, Ph.D.

Earth Science

National Oceanic and ATM

Administration

Albert J. Finney, Jr., B.S.*

Accounting

Raytheon Company

Susan L. B. Fintonis, J.D.

Management

Endicott College

Louis D. Fiore, M.D.

Health Science

VAMC

Harold R. Fisher, J.D.

Information Systems

Commonwealth of Massachusetts

Marjorie Fisher, B.S.

Health Record Administration

Harvard University Health

Services

William H. Fisher, M.A.

Criminal Justice and Security

Massachusetts Department of

Mental Health

James E. Fitzgerald, M.A.

Modern Language

Leo J. Fitzgerald, M.B.A.*

Management

General Electric Co.

Kevin T. Fitzpatrick, M.B.A.*

Finance

Boston Public Library

J. Joseph Fitzsimmons, M.B.A.*

Management

Polaroid Corp.

Roberta Fitzsimmons, J.D.

Business Law

Law Offices of Roberta

Fitzsimmons

James C. Flaherty, M.L.S.

Library Science

Framingham Public Library

Ruth W. Flaherty, M.B.A.

Human Resources Management

Frances B. Fleming, B.F.A.

Art

Frances Fleming, Graphic Design

William P. Fleming, M.B.A.

Marketing

Goddard Hospital

Anne Fletcher, M.A.

Drama

Myrtle R. Flight, Esq., J.D.

Health Management

Self-employed

David E. Floreen, M.P.A.*

Political Science

Massachusetts Bankers

Association

Edith E. Flynn, Ph.D.

Criminal Justice and Security

Northeastern University

Leo M. Flynn, M.B.A.*

Real Estate

Leo Flynn, R.E. & Appraising

Peter E. Flynn, J.D.*

Real Estate

Flynn Realty, Inc.

Thomas J. Flynn, J.D.

Human Resources Management

Thomas J. Flynn & Assoc.

William B. Flynn, Ph.D.*

Psychology

Philip S. Fogelman, M.A.

Alternative Freshman/English

Robert E. Foley, M.B.A.

Accounting

Council for Economic Action, Inc.

Murray Forbes, M.F.A.

Art

Navigator Foundation

Jacqueline M. Fortier, M.A.

Psychology

McLean Hospital

Armand L. Fortin, B.S.*

Purchasing

Honeywell, Inc.

Christopher C. Foss, M.A.

Alternative Freshman/English

James Foss, Jr., LL.B.

Human Resources Management

Federal Mediation and Counseling

Services

Douglas G. Foster, M.Ed.*

Earth Science

Catholic Memorial High School

Gale P. Foster, B.S.*

Marketing

Foster & Associates

William M. Fowler, Ph.D.*

History

Northeastern University

Robert M. Fox, M.B.A.*

Marketing

Gerber Electronics

Walter Fox Tree, M.A.T.*

Art

University of Massachusetts

Laura L. Frader, Ph.D.

History

Northeastern University

Thomas B. Francis, Jr., M.P.A.

Human Resources Management

City of Boston

Audrey K. Frank, M.S.W.

American Sign Language

Harriet Fraser, M.Ed.

Alternative Freshman/Language

Skills

Rosemary Frasso, A.S.

Radiologic Technology

Children's Hospital

Howard H. Freedman, M.S.*

Accounting

Raytheon Company

Paula M. French, M.B.A.

Management

Northrup Corporation

Melvin W. Friedman, M.B.A.*

Management

M. W. Friedman Associates

Kurt M. Frim, M.B.A.

Management

General Electric Aerospace

Ingeborg Fulepp, M.A.

English

Robert L. Fulford, B.S.

Purchasing

Varian/Extrion

Vincent J. Furlong, M.A.

Industrial Management

Defense Supply Agency

Mira A. Furth, M.B.A.

Women's Career Program

Furth Associates

W. Arthur Gagne, Jr., M.B.A.*

Management

Edadcon Services Co.

Christine W. Gailey, Ph.D.

Sociology/Anthropology

Northeastern University

Nona Gainsforth, B.A.

Music

Self-employed

Ronald M. Galiazzo, M.Ed.

American Sign Language

Northeastern University

Esther M. Gallagher, D.M.D.*

Health Science

Tufts University

Richard R. Gallagher, M.Ed.

Information Systems

Marshfield High School

Mary E. Gamerman, B.A.

Biology

Northeastern University

Laura Ganino, B.F.A.

Art

Autographix Inc.

Chun Xin Gao, M.S.

Chemistry

Northeastern University

David A. Gardner, Ph.D.

Technical Communication

Lotus

Paul C. Gay, J.D.*

Business Law

Harrison & McGuire

Jonathan Gbur, M.B.A.

Transportation

Northern Transportation, Inc.

Jonathan M. Geer, B.S.

Earth Science

Commonwealth of Massachusetts

Department of Environmental

Management

Sandra E. Geer, M.Ed.*

Psychology

Samuel S. Geller, M.B.A.*

Accounting

FSC, Inc.

Leanne M. George, B.A.

Art

Self-employed

Anne M. Germain, Ph.D.

Information Systems

Self-employed

Ara Ghazarians, M.A.

Sociology/Anthropology
Armenian Review Inc.

David M. Ghazil, M.B.A.

Human Resources Management
Honeywell

James G. Giammarinaro, M.B.A.

Finance
Dennison Manufacturing Company

Dominic Giarratani, J.D.

Real Estate
U.S. Postal Service

Adrian T. Gilbert, M.S.

Biology
Northeastern University

Katherine L. Gilbert, B.A.

Sociology/Anthropology
Northeastern University

Robert E. Gilbert, Ph.D.

Political Science
Northeastern University

Mary L. Gill, M.A.

Health Management
Blue Cross/Blue Shield

La Rue W. Gilleland, M.A.

Journalism
Northeastern University

Ruth Gilleran, M.B.A.

Accounting
The Gillette Company

William J. Gillespie, Ph.D.

Therapeutic Recreation
Northeastern University

Louis F. Giorgetti, M.S.

Medical Laboratory Science
Milton Medical Lab

Alan B. Gladstone, B.S.*

Accounting
Alan Gladstone, CPA

Phyllis S. Glick, D.B.A.

Political Science

James L. Glinos, M.Ed.*

Human Resources Management
Glinos Associates

Victor B. Godin, D.B.A.

Information Systems
Northeastern University

Robert M. Gogan, Jr., M.A.

English
Mount Ida College

Maureen D. Goggin, M.A.

English
Northeastern University

Peter N. Goggin, M.A.

Alternative Freshman/English

Meryl Goldberg, M.A.

Music

Robert L. Goldberg, M.B.A.*

Management

Daniel Golden, Ph.D.

English
Wheaton College

Kenneth E. Golden, M.B.A.

Information Systems
Prime Computer, Inc.

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Human Resources Management
Self-employed

Stan Goldman, J.D.*

Political Science
Massachusetts Department of
Mental Health

Charles W. Goldsmith, J.D.

Journalism
United Press International

Harold M. Goldstein, Ph.D.

Economics
Northeastern University

Howard I. Goldstein, J.D.*

Business Law
Self-employed

M. Alvin Goldstein, A.B.*

Information Systems
Consultant

Robert J. Goldstein, M.A.*

Sociology/Anthropology
U.S. Postal Service

Susan J. Goldwitz, A.M.

English
Danforth Museum of Art

Maria G. Gonzalez-Rivera, B.A.

Economics

Robert S. Goodman, M.A.

Human Resources Management
Grossmans, Inc.

Stephen Goodyear, M.A.*

Modern Language

Daniel D. Gordon, M.A.*

Economics
Salem State College

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Radiologic Technology
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Hotel and Restaurant Management
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Art
Babson College

Leslie C. Gosule, B.S.*

Accounting
Leslie C. Gosule & Company

Daniel Z. Gould, M.B.A.*

Industrial Management
GTE

Helen F. Gould, M.S.

Nursing
VA Outpatient Clinic

Frank S. Govern, M.S.

Health Management
JCRT Harvard Medical School

Saeed Gozashti, M.S.

Chemistry
Northeastern University

David F. Grace, C.A.G.S.*

English
Lasell Junior College

Daniel A. Grady, M.B.A.*

Accounting
Bose Corp.

William E. Grady, M.B.A.*

Industrial Management
Grady & Associates

Robert T. Granfield, M.A.

Sociology/Anthropology
Northeastern University

Daniel J. Grant, Jr., M.A.

Art
Textron Defense Systems

William H. Grass, M.A.

Music
Boston Conservatory of Music and
Boston University

Joan Grasso, A.S.

Radiologic Technology
Lahey Clinic

Sandra M. Grasso, M.S.

Biology
Lesley College

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Worcester Polytechnic Institute

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Transportation
Mass Bay Transportation
Authority

Alec Grey, J.D.

Real Estate

Arthur M. Graziano, B.S.

Human Resources Management
Sweet Life Retail

Lewis Greenberg, M.A.

Psychology
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Claire M. Greene, M.B.A.

English
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John T. Gregg, B.A.*

Real Estate
Beal & Company

Kristo A. Gregory, M.B.A.*

Finance

Prudential Bache Securities

Ann M. Grennell, M.A.

Alternative Freshman/History

Boston College

Ralph Grieco, M.B.A.

Accounting

Northeastern University

Gerald R. Griffin, Ph.D.*

English

Northeastern University

Julia A. Griffin, Ph.D.

Music

Northeastern University

John L. Griffith, B.S.*

Management

State Department of Environmental Management

Randall P. Grometstein, J.D.

Business Law

Donna P. Grosjean, B.S.

Biology

Brigham & Womens Hospital

Cherif Guenoune, M.A.

Sociology/Anthropology

Ronald E. Guittarr, B.S.*

Human Resources Management

Retired

Margaret E. Gundal, M.A.

Alternative Freshman/Mathematics

Roland D. Gunn, M.A.

Philosophy/Religion

Barry C. Guthray, Esq., J.D.

Business Law

Commonwealth of Massachusetts Securities Division

Herbert R. Haber, M.A.

English

Compugraphic Corporation

Reginald W. Hache, M.A.*

Music

Northeastern University

Katherine K. Hacker, M.B.A.

Management

Sheraton Corporation

James Haddad, B.S.

Mathematics

Scituate Post Office

Joanna Hadjicostandi, Ph.D.

Sociology/Anthropology

Northeastern University

William T. Hadley, B.S.

Marketing

The Hadley Company, Inc.

Vivian M. Haggis, M.S.

Information Systems

Haggis Consulting

George W. Hahn, M.A.T.

Earth Science

New England Marine Educational Services

Kenneth W. Hale, M.B.A.

Accounting

Ernst & Whinney

John P. Haley, C.A.G.S.

Information Systems

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Jay A. Halfond, Ph.D.

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Caroline G. Hall, B.A.

Real Estate

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Alternative Freshman/English

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Information Systems

Raytheon Company

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Charles Stark Draper Labs

Patricia W. Hamilton, M.A.

Technical Communication

Susan C. Hammond, C.P.A.

Accounting

Self-employed

Suzanne L. Hamner, M.A.

Alternative Freshman/History

William F. Hancock, Jr., M.B.A.*

Finance

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Carolyn Haneke, B.A.

Technical Communication

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Mary V. Hanley, M.A.

Nursing

Self-employed

Phyllis M. Hanlon, M.Ed.

Alternative Freshman/Mathematics

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Technical Communication

Wang Laboratories

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Technical Communication

Digital Equipment Corp.

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Mathematics

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Mathematics

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Real Estate

Priscilla G. Harmel, M.Ed.

Drama

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Alternative Freshman/History

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Thomas M. Hart, M.S.*

Accounting

U.S. Treasury

Harold Harutunian, Ph.D.*

Mathematics

Salem State College

Ruth Harutunian, C.A.G.S.

Mathematics

Watertown School Department

Donald A. Harwood, Esq., J.D.

Criminal Justice and Security

Law Office of D. J. Piscitelli

Mohammad S. Hasan, M.A.

Economics

Northeastern University

Martha S. Hassell, B.A.

Art

New England School of

Photography

Donald R. Hayden, B.S.*

Information Systems

Digital Equipment Corp.

David W. Hayes, Esq., LL.M.

Political Science

The Seiler Corporation

Kathleen H. Hayes, M.Ed.

Women's Career Program

Northeastern University

Robert T. Heald, M.B.A.*

Accounting

Heald Hoffmeister and Co.

Anthony D. Healey, J.D.

Real Estate

Kirkland Group

A. Robert Heanue, B.A.

Management

Heanue Management Services

James L. Hearn, M.B.A.

Health Management

Commonwealth of Massachusetts

Barbara A. Heffner, M.S.

Technical Communication

McGlinchey and Paul

F. Timothy Hegarty, Jr., J.D.

Real Estate

Norfolk & Dedham Fire Ins. Co.

Stephen J. Heinen, B.A.

Psychology

Northeastern University

Louise H. Hekimian, M.B.A.

Management

Barry L. Heller, M.S.M.E.

Art

JWG Associates

Karin S. Hellmer, M.Ed.

English

Xyvision

Les K. Hemmings, M.Ed.

Management

John Hancock

Dyke C. Hendrickson, B.A.

Journalism

Boston Herald

George S. Hennessy, M.B.A.*

Marketing

Xyplex

Olive L. Herder, M.P.H.

Health Science

Gerald H. Herman, M.A.*

History

Northeastern University

Ricardo A. Hernandez, M.A.

American Sign Language

CDHI

Robert F. Heron, Ed.D.

English

Belmont Public Schools

Kathleen M. Herr, Ph.D.

Political Science

Department of Public Health

George M. Herrick, M.B.A.*

Finance

Wayne C. Heward, B.S.

Human Resources Management

Northrop Corp.

Jennifer N. G. Hicks, M.A.

English

Chester W. Higgins, Ph.D.*

Management

Mark P. Higgins, J.D.

Business Law

First Service Bank

Peter Higgins, M.B.A.*

Accounting

Xtrax Corp.

Kenneth Hill, B.A.

Real Estate

Hill Brothers Real Estate and

Insurance

Lloyd H. Hill, J.D.*

Human Resources Management

City of Quincy

Lois A. Hill, B.S.

Alternative Freshman/Language Skills

Malcolm D. Hill, Ph.D.

Earth Science

Northeastern University

Stephen A. Hiltz, M.A.

Alternative Freshman/History

Northeastern University

James R. Hindman, M.B.A.*

Human Resources Management

Northrop Corp.

William G. Hines, B.S.

Marketing

Douglas, Hines and Sweeney

David C. Hirschy, Ph.D.

Technical Communication

Massasoit Community College

Susan A. Hoar, M.A.

Alternative Freshman/English

Mark O. Hodgson, M.A.

Sociology/Anthropology

Lee Ann Hoff, Ph.D.

Health Science

Northeastern University

Therese M. Hofmann, M.A.*

Speech Communication

Harvard University

Sherrie V. Holder, B.S.

Human Resources Management

Putnam Companies, Inc.

Lisa M. Holt, M.A.

Speech Communication

Morris Horowitz, Ph.D.

Economics

Northeastern University

Geralyn Horton, M.A.

Alternative Freshman/Language Skills

John W. Hosmer, Jr., M.B.A.

Finance

Boston Five Cent Savings Bank

Paul M. Hostovsky, B.A.

American Sign Language

Deaf-Blind Contact Center

John J. Houlihan III, M.S.

Criminal Justice and Security

Middlesex District Attorney's

Office

Elizabeth P. Howard, Ph.D.

Nursing

Northeastern University

Martin J. Howard, M.B.A.*

Accounting

Boston University

Randolph G. Howard, M.A.

Marketing

Jane A. Howe, M.A.

Sociology/Anthropology

Jane T. Howe, M.B.A.

Finance

Richard C. Howland, B.A.

Journalism

BASF Systems Corp.

Charles L. Hoyt, M.A.

English

Cinema Film Consultants

Jack E. Hoza, B.A.

American Sign Language

George B. Hrabec, M.S.

Medical Laboratory Science

Whidden Memorial Hospital

Margaret C. Huff, Ph.D.

Philosophy/Religion

Anthony H. Hull, Ph.D.*

History

University of

Massachusetts/Boston

William H. Hulsey, J.D.

Business Law

Northeastern University

Lawrence D. Humphrey, J.D.

Human Resources Management

Department of Education

Thomas K. Humphreys, M.A.

Economics

Kidder Peabody & Co.

Philip M. Hurdle, M.B.A.

Management

McLean Communications, Inc.

Robert H. Hutchins, B.A.

Journalism

Interlease Inc.

Marguerite R. Hutton, Ph.D.

Accounting

Northeastern University

Linda A. Hyde, B.S.

Health Record Administration

Mediqual Systems, Inc.

Steven Incropera, M.B.A.

Industrial Management

Digital Corp.

Peter J. Ingeneri, Sr., M.Ed.

Mathematics

Retired

Hon. John J. Irwin, Jr., J.D.*
Criminal Justice and Security
 Massachusetts Supreme Court
 Justice

Muhammad F. Islam, M.A.
Economics

Nurul Islam, M.S.
Economics

Herbert H. Itzkowitz, M.B.A.*
Accounting
 Forman, Itzkowitz & Berenson,
 P.C.

Carl J. Izzo, B.S.
Real Estate
 Bank of Boston

Judith Jack, B.A.
Technical Communication

Charles E. Jackson, B.A.
Marketing
 New England Advertising Week

Stephen Jackson, M.S.
Earth Science

Donald M. Jacobs, Ph.D.
History

Northeastern University
Joshua R. Jacobson, Ph.D.
Music

Northeastern University
Thomas E. Jaillet, M.A.*

Mathematics
 Tabor Academy

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Human Resources Management
 Uniglobe Advantage Travel

Linda F. Jamieson, Ph.D.
Marketing

Northeastern University
Michael A. Jamison, M.S.

Purchasing
 Varian Associates

Paul A. Janell, Ph.D.*
Accounting

Northeastern University
Edward L. Jaye, M.B.A.

Marketing
 Brooks Automation

Bonnie S. Jefferson, Ph.D.
Speech Communication
 Boston College

Stephen W. Jefferson, Ed.D.
Criminal Justice and Security
 Ruffin Society

Annette S.L. Johansson-Los, M.A.
Speech Communication

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 Emmanuel College

Richard F. Johnson, Ph.D.
Psychology
 U.S. Army Research Institute

Robert F. Johnson, J.D.*
Criminal Justice and Security
 First Security Service Corp.

Rosaleen M. Johnson, M.A.
Mathematics

Algonquin High School
James R. Johnston, B.S.

Real Estate
 Equitable Real Estate

David M. Joulfaian, Ph.D.
Economics
 Massachusetts Department of
 Revenue

Philip C. Joyce, M.A.
Speech Communication
 Curry College

Robert L. Jumper, C.P.A.
Accounting

Robert L. Jumper, CPA
Joseph A. Kaczenas, M.B.A.*

Information Systems
 The New England

Betty F. Kadis, M.B.A.
Management

Mark A. Kagan, B.A.
Music

Mark H. Kaizerman, M.B.A.
Accounting

IDS Financial Services
Katherine M. Kalliel, M.Ed.

Women's Career Program
 Boston University

Charles F. Kane, M.B.A.
Finance

Prime Computer
Martin J. Kane, M.B.A.*

Purchasing
 Raytheon Company

Edward M. Kaplan, M.S.*
Information Systems
 Massachusetts General Hospital

Mort S. Kaplan, M.A.*
English

Northeastern University
Joan M. Kapolshok, M.P.A.

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 Department of Personnel

Administration
Steven D. Karchmar, M.S.*

Human Resources Management
 Wyman-Gordon Co.

Gary M. Karelis, M.B.A.*
Accounting

Karelis Realty Association

Charles Karis, Ph.D.*
Psychology
 Northeastern University

Ann C. Karnofsky, M.A.
Music

Barbara C. Kasselmann, B.A.
*Alternative Freshman/Language
 Skills*

Maurice Kaufman, Ph.D.
Education

Northeastern University
William D. Kay, Ph.D.

Political Science
 Northeastern University

Jill Kearney, M.B.A.
Accounting

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Walter E. Kearney, M.B.A.*

Accounting
 Northeastern University

John S. Kearns, Ph.D.
Psychology

Mount Ida College
Daniel J. Keating, Esq., J.D.

Real Estate
 Davey & Quinlan

John Keating, M.S.
Alternative Freshman/Mathematics

Claudia A. Keelan, M.F.A.
Alternative Freshman/English

Jane F. Kelleher, Ph.D.
American Sign Language

Northeastern University
George Kelling, Ph.D.

Criminal Justice and Security
 Northeastern University

Thomas W. Kelly, M.B.A.*
Information Systems

Hospital Laundry Assoc. Inc.
James M. Kenney, M.B.A.

Management Sciences
 Polaroid Corp.

Margaret L. Kent, M.A.
English

Linda Kent-Davis, M.B.A.
Accounting

Philip M. Keohane, M.A.*
Journalism

GTE Corp.
Janice D. Keough, M.A.

English
 North Shore Community College

Raht Ketusingha, M.A.
Economics

Northeastern University

Sylvia Keyes, C.A.G.S.*

Management

Bridgewater State College

Nancy Kindelan, Ph.D.

Drama/Speech

Northeastern University

Brian L. King, M.B.A.*

Marketing

Textron Defence Systems

Janet M. King, Ph.D.

English

John M. King, M.P.A.

Criminal Justice and Security

Bentley College

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Alternative Freshman/Business

Management

Sandra J. King, B.S.*

Information Systems

Shawmut Bank

Sandra T. King, M.B.A.

Marketing

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Gary F. Kinsella, J.D.*

Political Science

Attorney at Law

Paul G. Kinsella, B.S.*

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Commonwealth Real Estate

Group, Inc.

Jerry Kirkpatrick, Ph.D.

Marketing

Northeastern University

Barbara L. Klein, B.A.

Art

BK Associates Inc.

Saul Klein, Ph.D.

Marketing

Judy S. Klickstein, B.A.

Health Record Administration

Harvard Community Health Plan

James P. Kneeland, M.B.A.

Information Systems

DYAD Corporation

William E. Kneeland, B.S.

Accounting

Northeastern University

Ernest A. Knott, III, M.S.

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Data General

Claire E. Knox, C.A.G.S.*

English

Northeastern University

John L. Kobrick, Ph.D.*

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U.S. Army Research Institute

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Earth Science

Museum of Science

Bernhard J. Kohler, M.B.A.*

Industrial Management

Self-employed

Gerald G. Kokos, M.B.A.*

Finance

Prime Computer, Inc.

Anja S. Kondo, M.A.

Sociology/Anthropology

Constantina Kondopoulos, M.A.

Alternative Freshman/Sociology

Susan M. Kooperstein, M.S.

Marketing

Kooperstein Comm.

Roberta L. Kosberg, Ph.D.

Speech Communication

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George J. Koslosky, M.B.A.

Purchasing

Mercury Computer Systems

James F. Kovacevic, A.S.

Art

Joann Kovacich, M.A.

Sociology/Anthropology

Bennett L. Kramer, M.S.*

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Mathematics

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Art Krauss, M.F.A.

Art

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Information Systems

Self-employed

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Business Law

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Steven A. Kravetz, M.B.A.

Accounting

Apparel Retail Corp.

Laura J. Krims, Esq., J.D.

Business Law

Ficksman & Conley

Michael P. Krone, Esq., J.D.

Business Law

Private Law Practice

Susan R. Kuder, M.A.

English

Ravech Aronson and Shuman

Ralph R. Kunkel, B.A.

Biology

Northeastern University

Daniel D. Kurylo, Ph.D.

Psychology

Eye Research Institute, Retina

Foundation

Ellen Kushner, B.A.

English

WGBH-FM

Goplan Kutty, Ph.D.

Economics

Mansfield University

Paul LaPlante, M.A.

Modern Language

Northeastern University

George M. Larue, M.A.

History

Boston University

Janine E. Labak, M.S.W.

Technical Communication

Self-employed

Walter E. Labonte, M.A.

English

Hull Public Schools

Anthony J. LaCava, Jr., B.S.

Marketing

Peat Marwick Mitchell & Co.

R. Kevin Lacey, Ph.D.

Modern Language

Bruce G. LaFlamme, M.S.W.*

Health Management

Massachusetts Department of

Mental Retardation

Eddy F. Laird, E.D.

American Sign Language

Wendy W. Laird, M.S.

American Sign Language

Valerie A. Lamb, B.S.

Radiologic Technology

Northeastern University

Paul K. Lambert, M.B.A.*

Transportation

Lambert Consultant Inc.

Philip J. Lamy, M.A.

Sociology/Anthropology

Essex Institute and Northeastern

University

Stephen R. Lancey, Ph.D.*

Psychology

Boston VA Medical Center

Robert H. Landry, M.B.A.*

Accounting

Massasoit Community College

Pamela J. Laskey, M.A.

Speech Communication

Union Office Supply and Inters.

Barry D. Latta, M.S.

Information Systems
Division of Employment Services

Philip J. Laurens, M.S.*

Mathematics
Bentley College

Irma H. Lauter, M.S.M.E.

Information Systems
NYNEX

Cindy P. Lawler, M.A.

Psychology
Northeastern University

Thomas A. Lawler, M.S.

Accounting
Thomas A. Lawler, CPA

Charles E. Lawton, M.Ed.

English
Lincoln High

Alfred Lazzeri, M.F.A.*

Art
Free Lance Artist

Renee LeWinter, M.F.A.

Art
Northeastern University

James N. LeBlanc, M.A.

Information Systems
Burlington Schools

Stewart L. Lebo, M.S.*

Information Systems
Bank of Boston

Hollington Lee, B.S.

Biology
Lee Graphics

Patricia A. Lee, B.A.

Medical Laboratory Science
The Childrens' Hospital

Jennifer Leeman, M.A.

Modern Language

Carlton Lehmkuhl, Ph.D.

Alternative Freshman/Mathematics

Constance Leigh, M.A.*

English

Martha Leinroth, M.A.

Art

D. Paul Leitch, Ph.D.

Psychology
U.S. Army Natick R&D Command

Ellyn A. Lem, M.A.

Alternative Freshman/English

Margo F. Lemieux, B.F.A.

Art

Bernard J. Lemire, B.S.

Chemistry
Northeastern University

Daniel A. Lennon, III, Ph.D.

Psychology
Northeastern University

Julia H. Lennon, M.A.

Sociology/Anthropology
Lesley College

Phillip W. Le Quesne, Sc.D.

Chemistry
Northeastern University

Thomas R. Lerra, Ph.D.

Management
Quinsigamond Community College

David W. Lesch, M.A.

Political Science
Center for Mideastern Studies

Mary F. Leslie, M.Ed.

Alternative Freshman/Language
Skills

Northeastern University

Marvin X. Lesser, Ph.D.

English
Northeastern University

Albert M. Levenson, M.B.A.*

Management Sciences
Charles Stark Draper Labs

Paul H. Levenson, D.D.

Philosophy/Religion
Northeastern-Hillel

Ronald M. Levenson, B.S.

Accounting
Peat Marwick Mitchell & Co.

George E. Levesque, M.S.

Health Management
Rhode Island Hospital

Barry S. Levine, M.Ed.

Health Science
Self-employed

Lawrence J. Levine, Ed.D.

Therapeutic Recreation
City of Boston

Philip A. Levy, B.A.

Technical Communication
Digital Equipment Corp.

David J. Lewek, M.B.A.

Management
Child World, Inc.

Del E. Lewis, M.F.A.

Drama
Northeastern University

Stephen P. Lewontin, Ph.D.

Political Science
Gamma-Liaison Photo News

Domenic J. Liberatore, M.B.A.*

Industrial Management
Raytheon Company

Sandra M. Licter, M.S.

Information Systems
Raytheon Company

Janet K. Linder, J.D.

Human Resources Management

Richard Lindy, Ph.D.

Accounting
Northeastern University

Joanne G. Linowes, M.S.*

Speech Communication
The Corporate Medical Group

Marc Lars Lipson, M.B.A.

Finance
Northeastern University

Robert L. Litrownik, Ph.D.

Psychology
Center for Mental Health

George F. Litterst, M.A.

Music
New England Conservatory of
Music

Marcia M. Littlefield, M.A.

Speech Communication

Thomas E. Littlehale, M.Ed.*

Information Systems
Retired

J. Antony Lloyd, M.A.*

English
Beth Israel Hospital

Jeannie E. Lloyd, M.A.

Alternative Freshman/English

Joseph S. Lo Castro, Ph.D.*

Psychology
Boston VA Medical Center

Carol A. Locus, M.A.

Modern Language
Northeastern University

Richard C. Logan, M.B.A.

Health Record Administration
Medical Records Associates

Edward J. Lonczak, M.B.A.*

Management
Management Consultant

Robert F. London, M.B.A.

Finance
Raytheon Company

Miller C. Lovett, Ph.D.*

Management
University of Massachusetts/Boston

Richard J. Lucey, M.B.A.

Marketing
R. J. L. Associates

Hope E. Luder, M.A.*

History
Burlington High School

Daniel G. Lutts, M.A.

Technical Communication
Information Resources, Inc.

Maureen C. Lynch, M.A.*

English
Self-employed

Daniel W. Lyons, J.D.

Business Law
Silver & Ahern

Paul E. Lyons, B.S.*

Industrial Management
The Gillette Company

Paul E. Lyons, M.Ed.

Mathematics
Cambridge School Department

Robert L. Mabardy, M.B.A.*

Human Resources Management
Ram Contracting, Inc.

Andrew C. MacAulay, M.S.*

Chemistry
New England Medical Center
Hospital

Thomas J. MacDonough, M.A.*

History
Town of Norwood

Patricia R. MacDonald, M.A.*

English

Ronald C. MacKay, M.A.

English
Northeastern University

Alan A. Mackey, A.M.*

Mathematics
Retired

Diane F. MacNeil, M.S.

Nursing
Salem State College

James E. MacNeil, Jr., M.S.

Earth Science

Sylvia A. MacPhee, M.S.*

Sociology/Anthropology
Lasell Junior College

Katherine A. MacPherson, M.A.

Journalism
Northeastern University

William J. Madden, B.S.*

Accounting
Self-employed

Michael J. Maggard, D.B.A.

Management
Northeastern University

Judith P. Magidson, M.Ed.*

Alternative Freshman/Language
Skills

Northeastern University

Dominic J. Magnarelli, J.D.

Mathematics
Northeastern University

John A. Maguire, B.S.*

Information Systems
Self-employed

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Education
Northeastern University

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Health Record Administration
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Susan S. Maire, J.D.

Business Law

Robert E. Mairs, B.S.*

Human Resources Management
Raytheon Company

Helen C. Makris, M.Ed.

Alternative Freshman/English

Denis Malin, M.B.A.

Information Systems
Star Market Company

Judith Mallette, B.S.

Mathematics

Robert G. Mallion, M.A.*

Earth Science
Science Application Int. Corp.

Gerard Malone, J.D.

Law
District Attorney's Office

John F. Maloney, M.Ed.

Mathematics
Boston Latin School

Stella Maris Maloof, M.A.

Sociology/Anthropology
Northeastern University

Anne S. Manion, M.B.A.

Health Science
Self-employed

Jeanne Mankus, M.Ed.

Therapeutic Recreation
Agape Inn

Michael E. Manning, M.A.

Music
Northeastern University

Albert R. Manson, M.Ed.*

Information Systems
Honeywell Information Systems

Jack J. Manuel, Ph.D.*

Philosophy/Religion
Creative Humanistics, Inc.

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Industrial Management
New England Medical Center
Hospital

Barbara B. Marcel, M.A.

Psychology
Northeastern University

Alfred G. Marcotte, M.S.E.E.*

Mathematics
Mitre Corp.

Catherine Marcotte, B.A.

Mathematics
Cardinal Spellman High School

John L. Marcy, M.A.

Art
Palm Press

Julius Mariasis, M.B.A.*

Management

Steve J. Marino, B.S.*

Mathematics
Wilmington High School

Janet H. Marler, M.S.

Finance
TLP Leasing Programs Inc.

Bruce E. Marquis, M.A.

Health Science
Results Service Co., Inc.

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Human Resources Management
Self-Employed

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Management
Digital Equipment Corp.

Barbara E. Martin, B.A.*

Medical Laboratory Science
Northeastern University

John A. Martin, M.B.A.*

Accounting
Northeastern University

John B. Martin, B.S.

Information Systems
Raytheon Company

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Human Resources Management
Federal Mediation & Concil.
Services

Zareh Martin, M.Ed.*

Mathematics
Martin Management Inc.

Mary A. Marusich-Smith, M.A.

Sociology/Anthropology
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Raymond L. Mascola, M.B.A.

Marketing
Digital Equipment Corp.

Jerry A. Masnyj, M.S.

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Lawrence Memorial Hospital

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Accounting
Franklin Income Tax Consultant

Russell B. Mason, M.B.A.*

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Raytheon Company

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Criminology Research

Burton N. Matross, M.B.A.*

Information Systems
General Electric Company

George D. Matson, M.A.*

Speech Communication
Standard Management Corp.

Kevin E. Mautte, M.S.

Biology

Northeastern University

Thomas P. May, B.S.

Art

Mark Burton Inc.

Lawrence H. Mayer, B.S.

Human Resources Management

Raytheon Company

Katherine W. Mayo, M.B.A.

Marketing

Marketing Advantage

Teresa A. Mayors, M.A.*

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Criminal Justice

C.O.P., Groton, Mass.

Robert P. McAuliffe, M.B.A.*

Marketing

BTU Engineering Systems Inc.

Ronald J. McBrien, M.B.A.

Marketing

Lindsay Assoc.

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Sociology/Anthropology

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Brigham and Women's Hospital

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Larry D. McCargar, Ph.D.*

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Francis J. McCarthy CPA, M.B.A.

Information Systems

McCarthy & Company, C.P.A.

John D. McCarthy, M.B.A.

Accounting

U.S. Defense Department

John J. McCarthy, Jr., M.B.A.

Marketing

F.T. Howard Corp.

Patrick F. McCarthy, M.S.

American Sign Language

Haydon School

Rita M. McCarthy, M.B.A.

Marketing

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Jeffrey C. McConnell, M.A.

Philosophy/Religion

Massachusetts Institute of Technology

Tricia McConville, M.B.A.

Management

Training Etcetera

John E. McCormack, M.B.A.*

Accounting

Missionary Sisters SOC Mary

Leo F. McCue, Jr., Ph.D.*

History

Central Catholic High School

Francis G. McDermott, M.A.

Management

Ludlow Corp.

James F. McDermott, M.B.A.*

Accounting

Phelps/McDermott Corp.

Joseph P. McDermott, M.Ed.

Mathematics

Algonquin Regional High School

John F. McDevitt, M.P.A.

Criminal Justice

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Human Resources Management

Northeastern University

Janet McDonough, M.A.

Earth Science

Simmons College

William J. McDonough, M.P.A.

Health Management

Risk Management at Harvard

Lloyd W. McElaney, M.Ed.

Information Systems

Dept. of Public Welfare

Owen McGarrhan, B.S.

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Massachusetts Water Resource

Authority

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Technical Communication

Digital Equipment Corp.

Daniel R. McGrath, M.Ph.*

Psychology

Northeastern University

John B. McGrath, B.S.*

Finance

Retired

Eugene F. McGrory, B.A.

Accounting

Internal Revenue Service

James L. McGuinness, Jr., M.B.A.*

Accounting

EG&G, Inc.

Donna J. McGuire, H.S.D.

Art

McGuire Advertising & Design

Thomas J. McHugh, M.B.A.*

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Psychology

Shriver Center

Karen Y. McIntosh, B.F.A.

Art

Wang Laboratories

Frank McKay, Ph.D.

Biology

Arthur D. Little

Robert A. McKean, M.A.

Technical Communication

Chart Communications

Robert F. McKenna, M.A.

Alternative Freshman/English

Kevin J. McLatchy, M.F.A.

Art

Self-employed

June E. McLaughlin, M.S.

Health Management

Youville Hospital

Mark W. McLaughlin, M.A.

English

Paul D. McLaughlin, M.S.W.

Health Management

Central Boston Elder Services

Robert W. McLean, M.B.A.

Hotel and Restaurant Management

Self-employed

Denise M. McMahon, B.S.

Music

Joseph W. McNabb, M.A.

Health Management

Laboure College

Susan L. McNamara, M.Ed.*

Information Systems

McNamara & Associates Inc.

Richard J. McNeil, Jr., M.B.A.*

Economics

Northeastern University

Pauline M. McNulty, B.S.

Information Systems

Self-employed

Clay McShane, Ph.D.*

History

Northeastern University

Michael S. Mehrmann, Esq., J.D.

Business Law

Law Offices of M.S. Mehrmann

Bruce A. Mellin, M.S.*

Earth Science

Town of Chelmsford

Carl H. Mellin, M.B.A.

Industrial Management

Wang Information Services Corp.

Michael A. Memmolo, M.B.A.

Human Resources Management

Merrimack Valley Placement

Lloyd B. Merrill, B.S.

Information Systems
Grossman's, Inc.

George B. Merry, A.B.*

Journalism
Christian Science Publishing

Charles A. M. Meszoely, Ph.D.*

Biology
Northeastern University

Leonard F. Meuse, Jr., M.B.A.

Technical Communication
Self-Employed

Michael E. Meyer, Ph.D.

Philosophy/Religion
Northeastern University

Gerry N. Michaleas, M.A.

Psychology
Hellenic College

Bonnie Michelman, C.P.P., M.B.A.

Security
First Security Service Corp.

Bernard Michels, Ph.D.

Sociology/Anthropology

Julia S. Miles, B.A.

Biology
Philip R. Miles, M.B.A.

Accounting
Polaroid Corp.

Richard A. Milius, Ph.D.

Chemistry
Research Biochemicals Inc.

Robert A. Millen, Ph.D.

Management Sciences
Northeastern University

Adriene R. Miller, M.A.

Sociology/Anthropology
Northeastern University

Amie K. Miller, B.A.

Technical Communications
Digital Equipment Corp.

Bradley Miller, Ph.D.

Political Science
Northeastern University

Charles J. Miller, M.S.

Information Systems
Informed Solutions

Dard Miller, M.Ed.

Therapeutic Recreation
Ellen E. Miller, M.S.W.

Psychology
St. Elizabeth's Hospital

Hal Miller, Ph.D.

Philosophy/Religion
Mary-Margaret Miller, B.S.

Information Systems
Codman & Shurtleff, Inc.

Kellie L. Mills, A.S.

American Sign Language
Massachusetts Commission for
the Deaf

Patrick N. Mingolelli, M.B.A.

Accounting
Digital Equipment Corp.

Robert J. Minichiello, D.B.A.

Marketing
Northeastern University

Helena C. Minton, M.F.A.

English
University of Lowell

Richard R. Miranda, M.B.A.*

Purchasing
Multibank Financial Corporation

Kamlesh Misra, M.A.

Alternative Freshman/Economics
Gail F. Mohanty, Ph.D.

History
Framingham State College

Charles E. Mokotoff, M.A.

Music
James F. Molloy, Jr., M.B.A.*

Transportation
Northeastern University

Stephen P. Molloy, R.R.A., B.A.*

Health Record Administration
Lowell General Hospital

Barbara A. Molloy-Olund, M.F.A.

English
Self-employed

Lawrence F. Monaghan, B.S.

Information Systems
Bank of Boston

John E. Monahan, Jr., Ph.D.

Biology
CIBA Corning Diagnostics

Joseph O. Monahan, M.A.

English
Northeastern University

Robert L. Montminy, M.S.

Information Systems
Marshfield School Department

Diane L. Moore, M.A.

Philosophy/Religion
Brandeis University

John L. Moore, M.F.A.

Art
John Moore Graphic Design

Patricia A. Moore, M.A.*

Health Science
Laboure Junior College

Patricia B. Moran, M.Ed.

Mathematics
Saugus High School

Leslie B. Morash, M.B.A.*

Transportation

William R. Morin, B.S.

Information Systems
MBTA

Joanne Morreale, Ph.D.

Speech Communication
Northeastern University

Jerry A. Morris, M.B.A.*

Human Resources Management
Asquith & Jackson Assoc.

Richard M. Morrison, M.B.A.*

Information Systems
Strategic Planning Institute

William E. Morrison, B.S.*

Human Resources Management
Mary Morrissey, M.A.

Alternative Freshman/English

Peter J. Morrissey, B.S.

Information Systems
MBTA

Mark B. Moss, Ph.D.*

Psychology
University Hospital

Magdi Moussa, B.S.

Chemistry
Edmond J. Moussally, M.Ed.

Music
Northeastern University

Tyrone C. Mowatt, M.B.A.

Marketing
Interactive Data Corp.

Carl F. Moxey, Ph.D.*

Biology
Northeastern University

Louann Muir-Hutchinson, M.Ph.

Health Management
Health Markets Development

James D. Mukjian, M.B.A.*

Industrial Management
JDM Consultants

Barbara Mulcahy, M.A.

Alternative Freshman/English
John Mulhall, M.A.

Alternative Freshman/Language
Skills

Edward J. Mulholland, Ph.D.

Economics
Regis College

Robert W. Mullaly, Ph.D.

Psychology
Mullaly Associates

Edmund J. Mullen, M.Ed.*

History
Northeastern University

William S. Mullen, M.A.*

Political Science
Foxboro School System

Kevin P. Mulvey, L.L.M.

Sociology/Anthropology
Northeastern University

Charles W. Murphy, M.B.A.*

Finance

Bunker Hill Community College

Daniel C. Murphy, M.S.

Journalism

New England Newspaper Assoc.

David M. Murphy, Ph.D.

Speech Communication

Paul J. Murphy, J.D.*

Management

General Electric Company

Richard T. Murphy, M.Ed.

Mathematics

Boston Public Schools

Charles J. Murray, Ph.D.

Technical Communications

Digital Equipment Corp.

Keith B. Murray, D.B.A.

Marketing

Northeastern University

Vyasaraj V. Murthy, M.B.A.

Management Sciences

Digital Equipment Corp.

John A. Mylotte, B.A.

Technical Communication

Navy Cloth & Textile Research Facility

Julie M. Nardone, M.A.

Sociology/Anthropology

Massachusetts Department of Corrections

Shashi Nath, Ph.D.*

Sociology/Anthropology

Mohammed A. Nawawi, Ph.D.

Political Science

Wellesley College

Barbara E. Neale, M.Ed.

Speech Communication

Independent Concept Consultants

Eileen P. Nee, M.S.

Health Science

New England Deaconess Hospital

William P. Needham, M.A.

Psychology

Northeastern University

Theodore H. Needle, B.S.*

Accounting

Needle & Needle

Carl W. Nelson, D.B.A.

Management

Northeastern University

David C. Nelson, B.S.*

Accounting

Self-Employed

John W. Nelson, B.A.

American Sign Language

Northeastern University

David R. Netherton, M.S.

Political Science

Floyd G. Newton, M.A.

Art

Revolver, Inc.

Thomas J. Neylon, Jr., M.A.*

English

Watertown Public Schools

Phuoc V. Nguyen, M.S.

Chemistry

Northeastern University

Janet M. Nichols, M.B.A.

Management

Self-employed

Bruce E. Nickerson, Ph.D.*

English

Avco/Textron

James C. Nolan, M.S.W.

Human Resources Management

MBTA

Maurice J. Nolan, J.D.*

Human Resources Management

Raytheon

Gerald P. Noone, J.D.

Real Estate

Department of Attorney General

Seyed H. Noorian, M.B.A.

Finance

Boston University

John H. Northrup, M.S.

Accounting

Northeastern University

Richard W. Norton, B.A.*

Information Systems

Brockton Industrial Council

Vincent G. Norton, M.B.A.

Human Resources Management

Raytheon Company

Karen K. Norwood, M.F.A.

Art

Northeastern University

Donald J. C. Novak, Ph.D.

Philosophy/Religion

Massachusetts General Hospital

Edward G. Novello, M.B.A.*

Transportation

Best T&D Associates

Bonnie H. Nover, M.A.

American Sign Language

R.E.A.D.S., Inc.

Norbert F. Nunes, M.A.*

English

Massachusetts Bay Community College

Azinna Nwafor, Ph.D.

Political Science

David H. O'Brien, M.B.A.*

Accounting

Bank Of New England

John E. O'Brien, M.B.A.

Human Resources Management

Massachusetts Hospital Association

Richard J. O'Brien, B.S.

Information Systems

Massachusetts General Hospital

Robert M. O'Brien, B.S.*

Information Systems

Northeastern University

Frederick T. O'Connell, J.D.*

Accounting

Internal Revenue Service

Daniel F. O'Connor, M.S.*

Information Systems

Cullinet Software

Edward J. O'Connor, B.A.

Information Systems

GTE Systems

Margaret L. O'Kelly, M.B.A.

Accounting

Northeastern University

Marta Rosso O'Laughlin, M.A.

Modern Language

Aileen J. Ofer, M.A.*

English

Moshe Ofer, M.A.

Political Science

George C. O'Grady, B.A.

Information Systems

Digital Equipment Corp.

William J. Oldmixon, M.B.A.

Finance

Prudential Bache Securities

Russell W. Olive, D.B.A.

Industrial Management

Northeastern University

Ernest Oliveira, Jr., M.B.A.*

Industrial Management

General Electric Company

Dorothy M. Oliver, B.A.

Sociology/Anthropology

Thomas W. Oliver, Ph.D.

Accounting

Northeastern University

Wayne J. Oliver, M.A.*

Economics

Reed Consulting Group

Gerald F. Olsen, M.B.A.*

Accounting

Digital Equipment Corp.

George C. Olson, M.B.A.*

Information Systems

First Colonial Bank

Kirtland H. Olson, M.A.

Technical Communication

The Harvard Group

Ronald K. Olson, B.A.

Information Systems

RKO Systems

Susan J. Olson, B.S.

Medical Laboratory Science

Northeastern University

Tommasina A. Olson, M.B.A.

Management

Fletcher Detwiler and Co., Inc.

Jeffrey Olund, M.S.

Alternative Freshman/English

David F. O'Malley, B.S.

Technical Communication

David S. Omar, M.B.A.*

Economics

Donald A. O'Neil, Ph.D.

Marketing

RCA

Nancy P. Orton, B.A.

English

Gary S. Osmond, M.B.A.

Finance

Town of Wayland

Kathleen M. O'Toole, M.S.

Policing

M.D.C. Police Department

Maryann F. O'Toole, M.S.

Health Science

Laboure College

Robert E. O'Toole, M.S.W.

Health Management

Oakdale Counseling & Training

Susan M. Ott, Ph.D.

Psychology

Fernald State School

Robert M. Otten, Ph.D.

English

Assumption College

John B. Owen, M.A.T.

Technical Communications

Owen & Co.

Daniel J. Pagnano, Esq., J.D.

Human Resources Management

Holtz & Gilman

Niranjan N. Pai, M.S.

Chemistry

Northeastern University

Judith A. Palumbo, M.B.A.

Human Resources Management

Massachusetts Hospital Association

Anil M. Pandya, D.B.A.

Marketing

Northeastern University

Kwamina Panford, M.A.

Sociology/Anthropology

Northeastern University

Robert J. Pappalardo, B.A.

Art

George J. Parangimalil, M.A.

Sociology/Anthropology

Judith M. Pariseau, B.S.

Biology

Northeastern University

Cynthia J. Parker, B.S.

Management

Bank of Boston

Jeffrey S. Parker, M.A.

Technical Communication

Robert H. Parris, M.A.

Corrections

U.S. Probation System

Ann C. Parsons, B.S.

Alternative Freshman/Mathematics

Robert A. Parsons, M.B.A.

Management Sciences

Northeastern University

Virginia C. Parsons, M.A.

English

Northeastern University

S. Jack Pashoogian, B.S.

Mathematics

Retired

Paul S. Paslaski, M.B.A.*

Information Systems

Digital Equipment Corp.

Herbert S. Patchell, M.A.

Philosophy/Religion

Theodore C. Patrikas, B.S.*

Management

Retired

David F. Pauling, M.A.*

Modern Language

Susan W. Pease, M.B.A.

Technical Communication

Atena Life & Casualty

Robert J. Pecoraro, M.B.A.

Marketing

Semicon Company Inc.

Kim A. Pederson, M.F.A.

English

Charles River Assoc.

Henry L. Pelletier, M.F.A.

Art

GTE Systems Corp.

Martin L. Pendleton, Jr., B.S.*

Information Systems

Agency Management Systems

Sallyann Penta, M.B.A.

Accounting

MFS Service Center Inc.

Harry J. Perreault, B.S.

Information Systems

Liberty Mutual Insurance Co.

Peter E. Perroncello, M.S.

Corrections

Assistant Deputy Super.

Eleanor M. Perone, M.A.

Music

Self-Employed

Daniel Pershonok, Ph.D.*

Psychology

Harvard Medical School

Marjorie R. Peskin, M.Ed.

Technical Communication

Writing Services

Stuart S. Peterfreund, Ph.D.

English

Northeastern University

Eric D. Peterson, B.F.A.

Art

Daniel P. Petinge, M.B.A.

Purchasing

Polaroid Corp.

Ausrele M. Petronis, M.Ed.*

English

Carol A. Pharo, M.A.

Music

Marie J. Philip, B.A.*

American Sign Language

Northeastern University

Susan R. Philip, A.S.

American Sign Language

Northeastern University

Peter T. Philliou, Ph.D.*

Mathematics

Wentworth Institute

Laurence A. Picardi, M.B.A.

Marketing

Tekmat Corp.

Ralph L. Piedmont, Ph.D.

Psychology

Benjamin E. Pike, M.B.A.*

Human Resources Management

Massasoit Community College

Joseph G. Pike, M.A.

Health Record Administration

Westboro State Hospital

Karen F. Pike, M.Ed.*

Art

Gerald T. Pineault, M.B.A.*

Industrial Management

Polaroid Corp.

Hector E. Pineiro, B.S.

Real Estate

Department of the Attorney

General

Garth I. Pitman, Ph.D.**English*

Trident Regional High School

Lauren J. Pivnick, M.A.*Sociology/Anthropology*

Northeastern University

Kevin M. Plunkett, Ph.D.*Alternative Freshman/English***Karen L. Pokross, M.Ed.***Therapeutic Recreation*

Veterans' Administration

Joseph Polak, Ph.D.*Philosophy/Religion*

Boston University

Gladys M. Polansky, M.A.**English***Terry L. Poling, M.A.***Speech Communication*

Fidelity Investments

John J. Pollock, A.B.*Marketing*

Applied Videotex Systems, Inc.

Michael J. Pomarole, J.D.*Criminal Justice*

Suffolk County

Edward T. Popper, D.B.A.*Marketing*

Northeastern University

John D. Post, Ph.D.**History*

Northeastern University

Joseph L. Potts, M.B.A.*Finance*

Capital Business Group

James E. Poulos, M.A.**English***Stephen J. Powell, M.B.A.***Finance*

Instrumentation Lab., Inc.

Elizabeth J. Powers, B.S.*Information Systems*

Alpha Software Corp.

Kevin J. Powers, B.S.*Radiologic Technology*

Northeastern University

Stephen J. Powers, M.S.**Information Systems*

CapeShore Data

Richard A. Pozniak, B.S.*Marketing*

Massachusetts Hospital Association

Vichukorn Prapansiri, M.S.*Chemistry*

Northeastern University

Mark Prendergast, M.B.A.*Accounting*

BBN Communications

Andre P. Priem, M.A.*Human Resources Management*

Northeastern University

Marco M. Protano, B.S.*Management*

Bank of Boston

Edward V. Puopolo, J.D.**Business Law*

Puopolo & Carr, Attorneys

John L. Putnam, C.A.G.S.*Chemistry*

Marshfield Public Schools

Daniel F. Quinn, M.A.*Information Systems*

Northeastern University

Frank B. Quirk, M.A.*Information Systems*

Self-Employed

Samuel Rabino, M.B.A.*Marketing*

Northeastern University

Alan S. Radding, M.S.*Journalism*

Tunnel Radio

Safoura Rafeizadeh, M.F.A.*Art*

Porras & Lawlor Associates

Dolly S. Raja, M.A.*Economics*

Division of Employment Security

Ravi Ramamurti, M.B.A.*Management***Malati Ramratnam, Ph.D.****English*

Northeastern University

Andrew S. Rancer, Ph.D.*Speech Communication*

Emerson College

George B. Ransom, Jr., Ed.D.*Therapeutic Recreation*

Northeastern University

T. Neil Rantoul, M.F.A.*Art*

Northeastern University

Ronald Raphael, M.Ed.*Psychology*

Raphael Associates

Carla A. Ratti, Ph.D.*Psychology*

Northeastern University

Nathaniel C. Raymond, Ph.D.**Sociology/Anthropology*

University of Massachusetts/Boston

Bernard R. Redgate, M.S.*Information Systems*

Framingham Public Schools

Thomas A. Reed, Ph.D.*English*

Tufts University

Eric T. Reenstierna, B.A.*Real Estate*

T. H. Reenstierna & Sons

Roland J. Regan, Jr., Esq., J.D.*Marketing*

Harbridge House Inc.

Barbara J. Reid, M.Ed.*Human Resources Management*

Automatic Data Processing

Richard M. Reilly, M.A.*Human Resources Management*

American Arbitration Assoc.

Neil Rennie, M.F.A.*Art*

Self-employed

Sandra H. Resnick, M.Ed.*American Sign Language*

Northeastern University

Diana E. Reynolds, Ph.D.*Political Science***Susan E. Reynolds, M.Ed.***Alternative Freshman/Language**Skills***Christine Rhodes, M.S.***English***Evan B. Rich, M.B.A.***Finance*

Stone & Webster Eng. Corp.

Judith M. Richman, M.S.*Health Science*

Self-employed

Herbert L. Richmond, C.A.G.S.*Health Management*

Southeast Human Resources Assoc.

Stephen L. Ridge, M.B.A.**Accounting*

Digital Equipment Corp.

J. Scott Riley, B.S.**Marketing*

JSR Associates, Inc.

Mordechai Rimor, Ph.D.*Psychology*

Harvard University

Virginia C. Risse, M.Ed.*Sociology/Anthropology*

Massachusetts Mental Health

Center

Syed S. Rizavi, M.A.*Economics*

Northeastern University

Daniel J. Roberts, M.Ed.*Accounting*

Northeastern University

James F. Roberts, M.S.

Corrections
Massachusetts Department of
Corrections

Holbrook C. Robinson, Ph.D.

Modern Language
Northeastern University

Raymond H. Robinson, Ph.D.

History
Northeastern University

Michelle D. Roderick, B.S.

Therapeutic Recreation
White House Preschool

Peggy J. Roesler, M.A.

Therapeutic Recreation
Northeastern University
Cephas B. Rogers, M.B.A.*

Management Sciences
Digital Equipment Corp.

William H. Rogers, M.Ed.*

Transportation
Wang Laboratories

Irene L. Roman, Ph.D.*

Accounting
Newton North High School

William C. Ronco, Ph.D.

Human Resources Management
Northeastern University

Eugene H. Rooney, Jr., M.B.A.

Management
Massachusetts Department of
Personnel Administration

Fred A. Rosenberg, Ph.D.

Biology
Northeastern University

Nellie Rosenberg, M.A.

Modern Language
Alliqua Freniaise

Joel M. Rosenfeld, M.S.*

Industrial Management
Strategic Planning Institute

Edith Rosenthal, M.A.

Sociology/Anthropology
Northeastern University

Norma P. Rosin, M.Ed.

Alternative Freshman/Language
Skills

Richard S. Ross, M.A.

Alternative Freshman/History
Northeastern University

Arthur S. Rousmaniere, B.A.

Mathematics
Design Continuum, Inc.

Richard N. Roy, M.B.A.*

Transportation
Stone & Webster Engineering Corp.

Barry Rubenstein, M.B.A.

Human Resources Management

Gerald R. Rubin, B.S.*

Accounting
Greene, Rubin, Miller, Pacino

Leonard D. Rucker, M.B.A.

Technical Communication
Reading Municipal Light Dept.

A. Michael Ruderman, B.A.

Real Estate
Closings Ltd.

Louis Rudzinsky, B.S.*

Human Resources Management
Louis Rudzinsky Assoc., Inc.

Robert G. Ruland, M.B.A.

Accounting
Northeastern University

Nancy G. Rullo, M.B.A.

Finance
Commonwealth Federal Savings
Bank

Frederick L. Runyon, B.F.A.

Art

Bharat Ruparel, Ph.D.

Management
Northeastern University

Kathleen M. Russell, M.A.

Modern Language
Malden School Department

Thomas R. Rutishauser, B.S.

Music

Frank L. Ryan, Ph.D.*

English
Stonehill College

Michael P. Ryan, Ph.D.

English
Northeastern University

Charles M. Ryder, M.B.A.

Management
New England Mutual Life In-
surance Co.

John D. Ryder, M.B.A.*

Accounting
Tyco Laboratories, Inc.

Frederick J. Rys, M.B.A.*

Finance
NYNEX Service Company

Alexander R. Rysman, Ph.D.*

Sociology/Anthropology
Romm and Company

Majijeh Sabi, Ph.D.

Economics
Northeastern University

Harry Sabin Jr., M.B.A.

Purchasing
Northrop Corporation

Thaddeus P. Sadowski, M.Ed.*

Mathematics
Retired

Loulseged Sahlou, M.A.,

Economics
Cambridge Trust

Charles L. Sakey, M.A.*

English
Retired

Mary E. Salus, M.A.*

Sociology/Anthropology
Massachusetts Department of
Public Welfare

James B. Sampson, Ph.D.*

Psychology
U.S. Army Natick RD&E Center

Jayant N. Sane, Ph.D.

Chemistry
The Gillette Company

Jean M. Sannicandro, B.A.

Mathematics
Computervision Corporation

Richard H. Saracusa, M.B.A.

Information Systems
Polaroid Corp.

Ahmad Saranjampour, M.A.

Economics
Northeastern University

Ravi Sarathy, M.B.A.

Management
Northeastern University

Leo V. Sarkissian, M.A.

Therapeutic Recreation
South Shore ARC

Willis L. Saulnier, M.S.W.*

Human Resources Management
Creative Enterprises

Edward Saunders, D.B.A.

Finance
Northeastern University

Eunice Schatz, M.A.

Women's Career Program
Live/Work Direction

Jessie R. Schell, M.F.A.

English

Donald S. Scheufele, Ph.D.

Chemistry
Boston Public Schools

John J. Schickling, M.B.A.*

Accounting
Anasco Corporation

Patricia M. Schilling, M.B.A.

Management

James A. Schirillo, M.A.

Psychology
Northeastern University

Gregory A. Schissel, S.J., M.D.

Philosophy/Religion
Jesuit Community

William J. Schmid, B.S.

Marketing

Mark B. Schmidt, J.D.

Real Estate

Commonwealth of Massachusetts

Roy M. Schoenfeld, Esq., J.D.*

Human Resources Management

National Labor Relations Board

Rodney Schonland, M.B.A.

Transportation

Polaroid Corp.

Richard Schreuer, M.A.

Sociology/Anthropology

Northeastern University

Frank A. Schubert, J.D.*

Criminal Justice

Northeastern University

Susan A. Schwalb, B.F.A.

Art

Alan R. Schwalm, B.S.

Finance

Multibank Financial Corp.

Marilyn Scrizzi, Ed.D.

English

Self-employed

Frank J. Seegraber, A.B.*

Library Science

Boston College

Jeanne M. Segal, M.A.

Music

Self-employed

Carol J. Seidman, A.S.

American Sign Language

Massachusetts Commission for the Deaf and Hard of Hearing

Mary K. Seipke, M.F.A.

Art

Self-employed

Peter M. Selig, M.A.*

Economics

Raytheon Company

J. Thomas Sellendorff, M.S.

Marketing

Mentak Corporation

Patricia C. Selleck, B.S.

Radiologic Technology

St. Anne's Hospital

Peter Serenyi, Ph.D.

Art

Northeastern University

Susan M. Setta, Ph.D.*

Philosophy/Religion

Northeastern University

Kathleen M. Seigny, M.B.A.*

Accounting

Bridgewater State College

Lucy Sewall, B.A.

Human Resources Management

ABT Associates

John C. Shannon, M.A.*

Economics

Suffolk University

Robert J. Shannon, M.S.*

Medical Laboratory Science

Boston VA Medical Center

Arthur Shaw, E.Ed.

Alternative Freshman/Mathematics

Corey C. Shaw, J.D.

Law

Unitas & Shaw Law Office

David M. Shaw, LL.M.

Real Estate

Law Office of David M. Shaw

Elaine M. Shea, M.S.W.

Sociology/Anthropology

Family Services of Greater Boston

John T. Shea, B.S.

Art

Southeastern Regional High School

Shan-Shan Sheng, M.F.A.

Art

Self-employed

Edward H. Shenton, M.S.

Earth Science

Homeworks

Daniel A. Shepard, B.S.

Technical Communication

Federick N. Sheppard, M.B.A.

Finance

Bridgewater College

Joseph R. Sheppeck, M.B.A.

Mathematics

John Hancock Life Insurance Co.

Cordelia Sherman, Ph.D.

English

Boston University

Eliot H. Sherman, M.B.A.

Finance

Freudenberg Nonnoven LP

Stephen M. Shinnick, M.P.A.*

Political Science

Norwood Public Schools

Rebecca D. Shipp, M.F.A.

Alternative Freshman/English

Henrietta N. Shirk, Ph.D.

Technical Communication

Northeastern University

Henrietta M. Shmase, B.A.

Health Record Administration

Northeastern University

Ruth E. Shore, M.A.*

English

Fisher Junior College

Paul M. Short, M.S.*

Hotel & Restaurant Management

U.S. Army Natick RD&E Center

Lee C. Shortridge, M.F.A.

Art

Boston Guild of Artists

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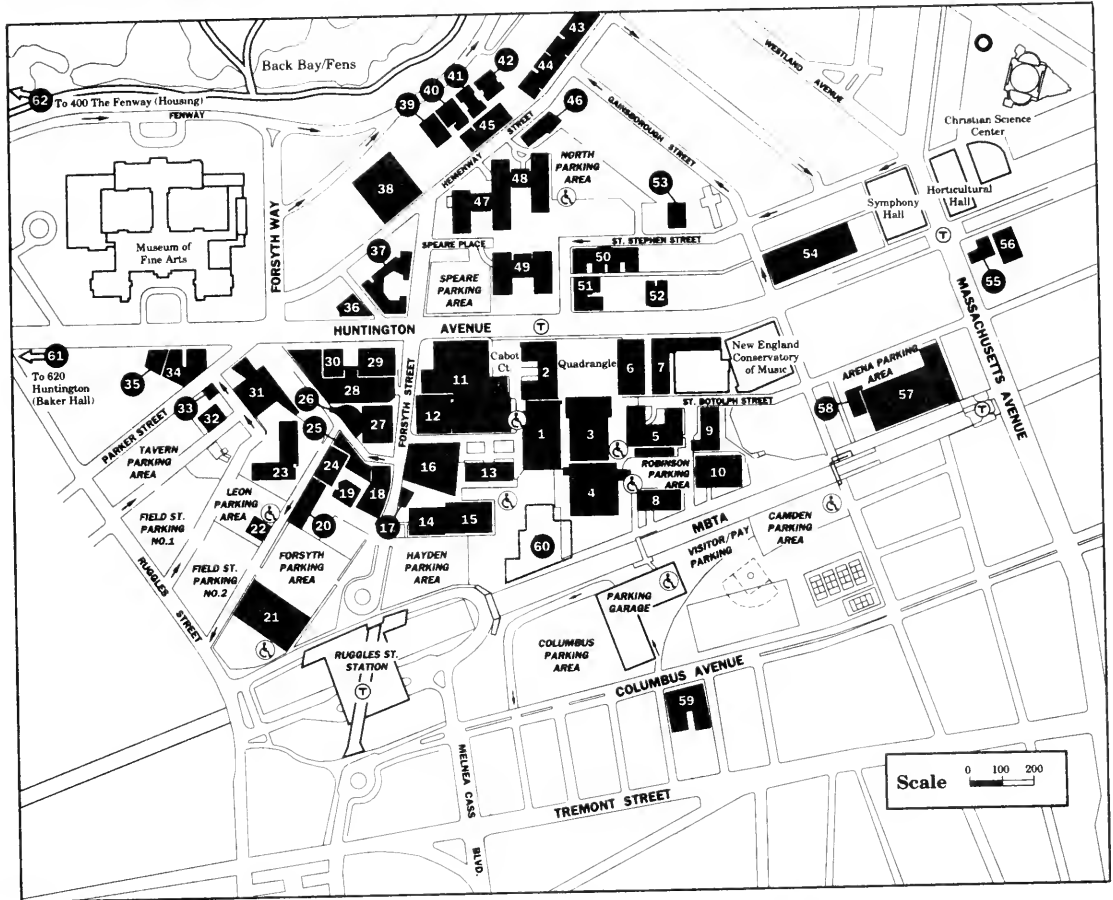
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** Term expires 30 June 1990

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Campus Maps



Academic and Service Buildings

- | | |
|---|--|
| 22 African-American Institute (AF) | 54 Huntington Plaza |
| 12 Barletta Natatorium (BN) | (271 Huntington Avenue) (HN) |
| 19 Boiler Plant | 10 Hurtig Hall (HT) |
| 7 316 Huntington Ave. | 26 Kariotis Hall (KA) |
| (Northeastern at the YMCA) | 41 Kerr Hall (Faculty Center) (KH) |
| 11 Cabot Physical Education Building (CB) | 29 Knowles Center (Gryzmish Hall) (KG) |
| 39 Cahners Hall (CA) | 29 Knowles Center (Volpe Hall) (KV) |
| 28 Cargill Hall (CG) | 25 Lake Hall (LA) |
| 13 Churchill Hall (CH) | 60 Library Resource Center, |
| 59 Columbus Place | under construction |
| (716 Columbus Avenue) (CP) | 57 Matthews Arena (MA) |
| 9 Cullinane Hall (CN) | 58 Matthews Arena Annex (MX) |
| 40 Cushing Hall (CU) | 20 Meserve Hall (ME) |
| 14 Dana Research Center (DA) | 5 Mugar Life Science Building |
| 27 Dockser Hall (DK) | (Peabody Health Professions Center) (MU) |
| 6 Dodge Library (DG) | 18 Nightingale Hall (NI) |
| 3 Eli Student Building (Auditorium) (EL) | 31 Parker Building (PA) |
| 4 Eli Student Center (Student Lounge) (EC) | 5 Peabody Center |
| 16 Forsyth Building (FR) | 2 Richards Hall (RI) |
| 17 Forsyth Building Annex (FA) | 8 Robinson Hall (RB) |
| 38 Forsyth Dental Building (FE) | 21 Ruggles Building (11 Leon Street) (RU) |
| 1 Hayden Hall (HA) | 15 Snell Engineering Center (SN) |
| 33 Hillel-Frager (HF) | 50 122 St. Stephen Street (SS) |
| 24 Holmes Hall (HO) | 30 Stearns Center (ST) |
| 56 236 Huntington Avenue (HU) | 55 Symphony Place |
| | (334 Massachusetts Avenue) (SY) |
| | 32 26 Tavern Road (TA) |

Key

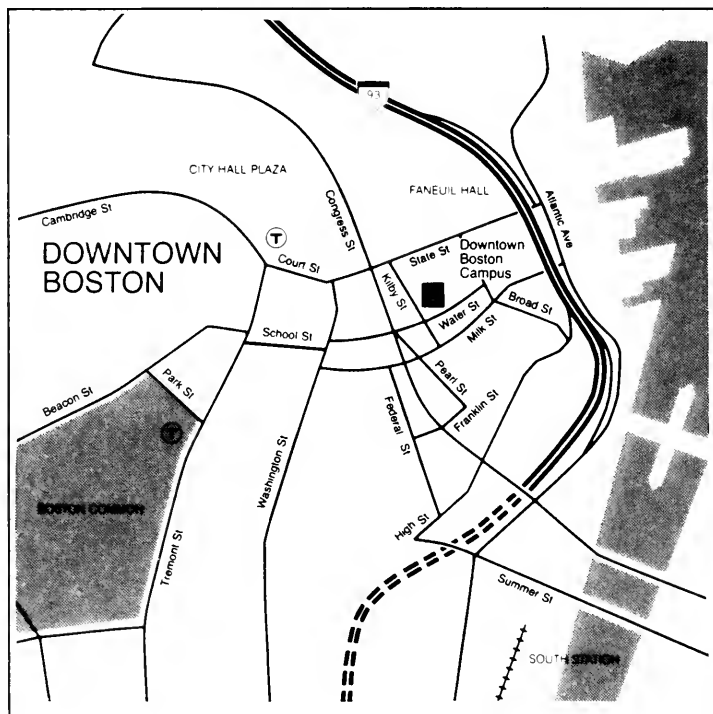
- Academic, Residential, and Service Buildings
- Handicapped Parking
- Street Direction



Maps are provided by the Information Center 115 Richards Hall, extension 2736. Some buildings on this map are used but not owned by Northeastern University.

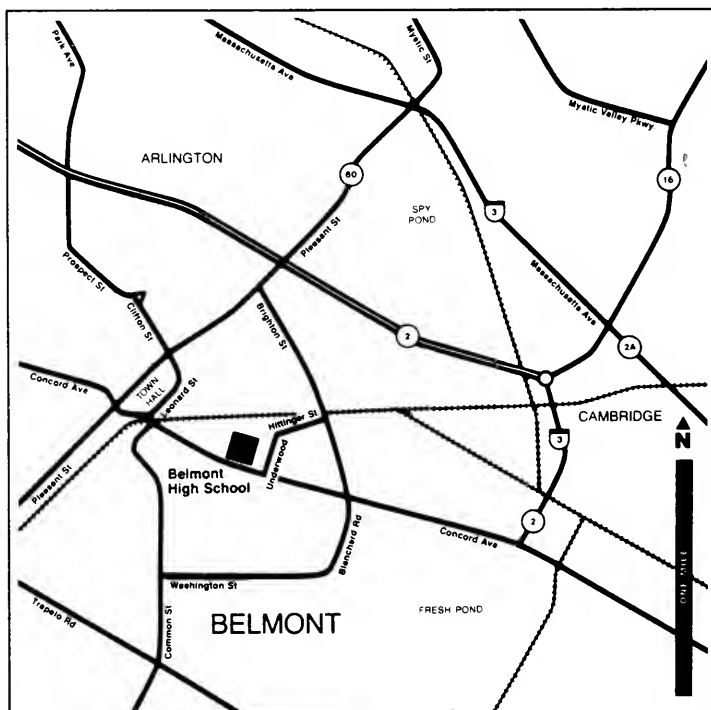
Boston Downtown Campus

5 Liberty Square
(Corner of Kilby and
Water Streets)

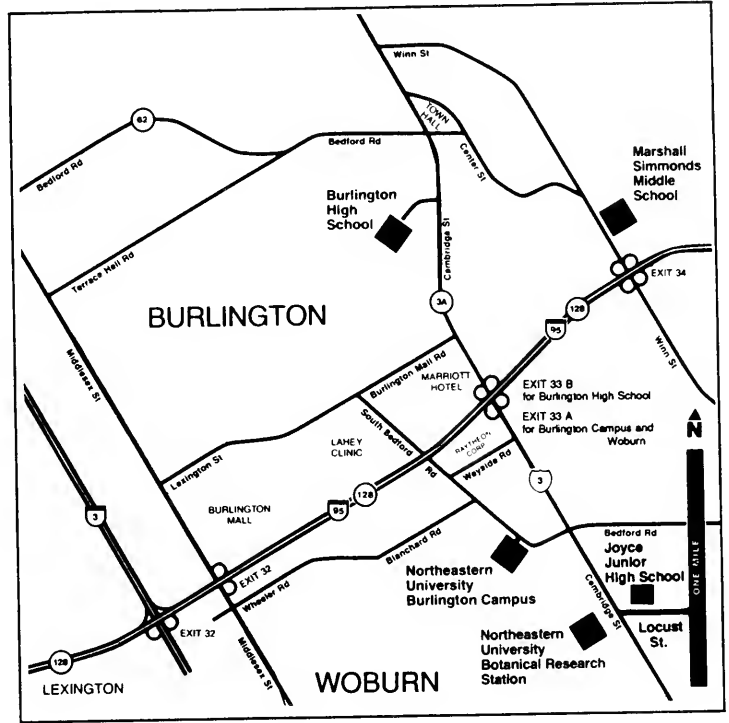


Belmont High School

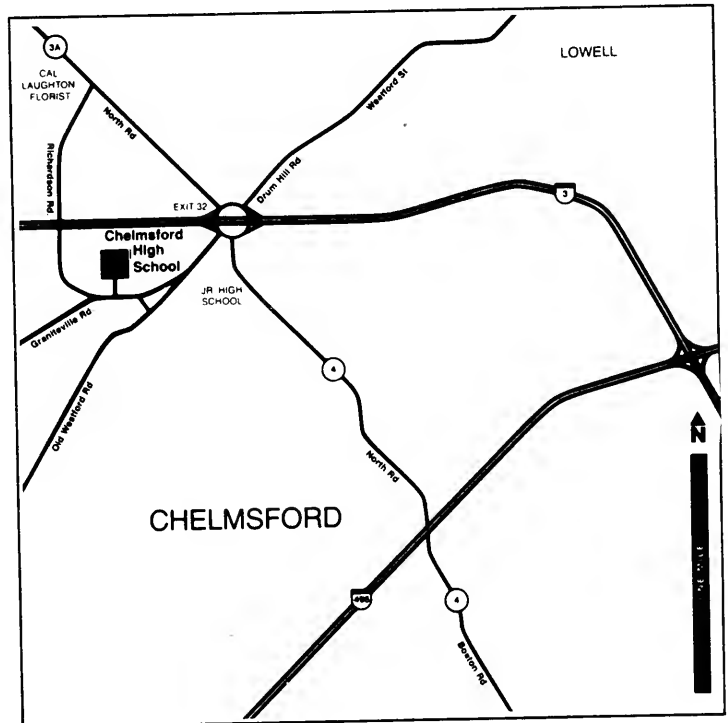
221 Concord Avenue



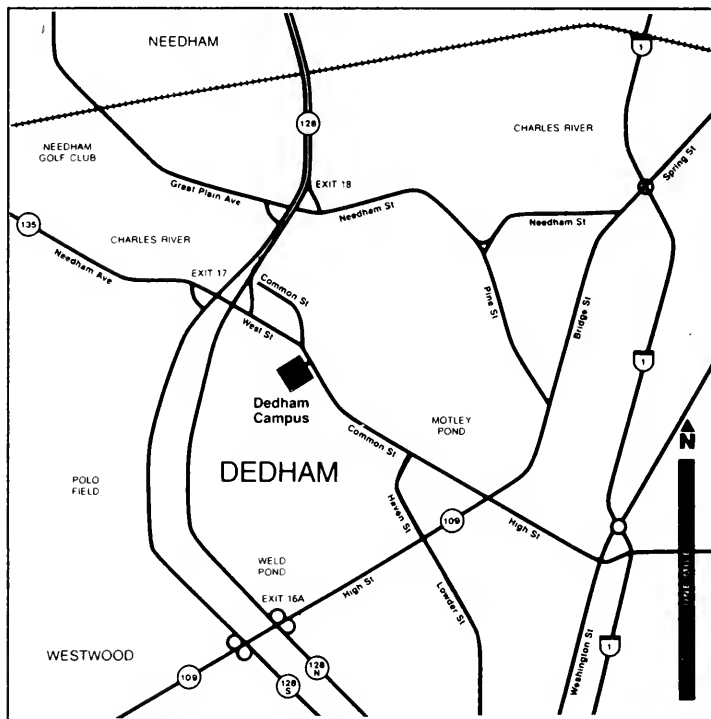
Burlington Campus
 South Bedford Road
Burlington High School
 123 Cambridge Street



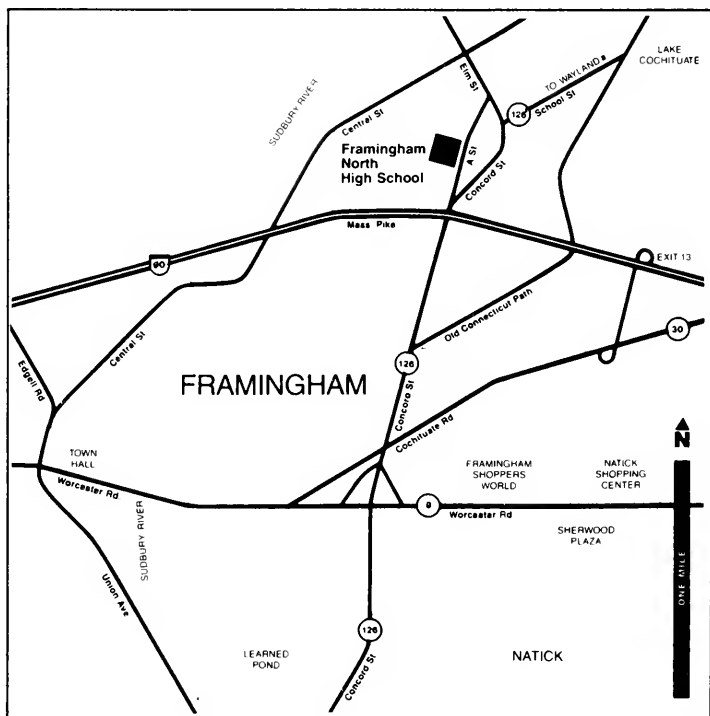
Chelmsford High School
 200 Richardson Road



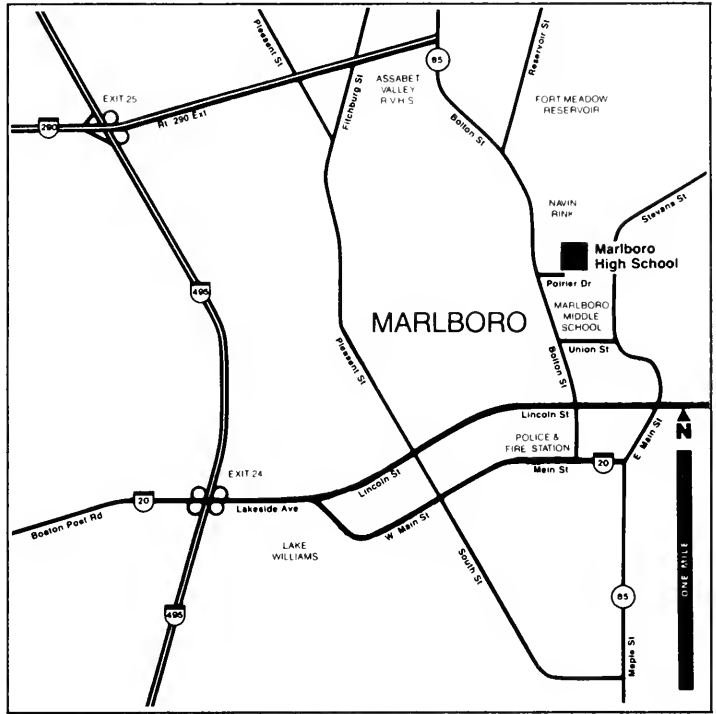
Dedham Campus
370 Common Street



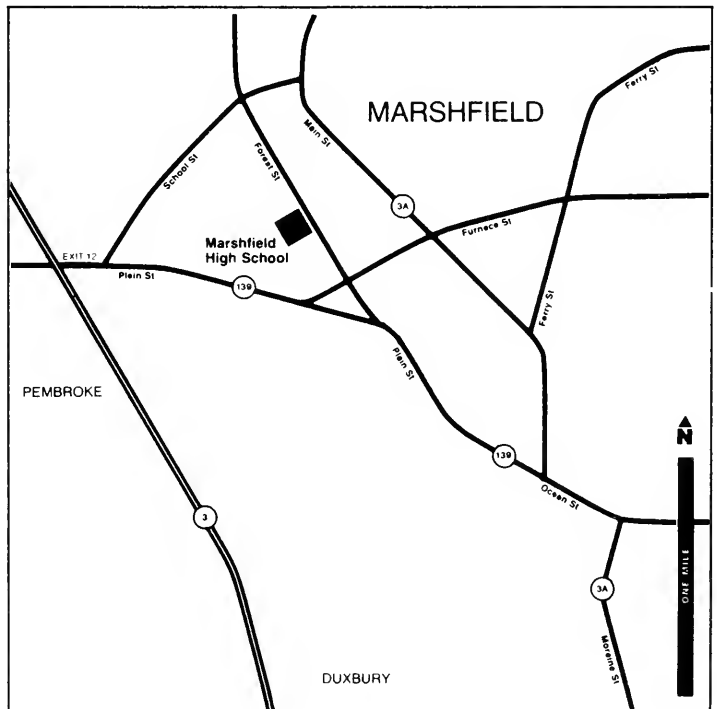
Framingham North High School
A Street



Marlboro High School
Bolton Street

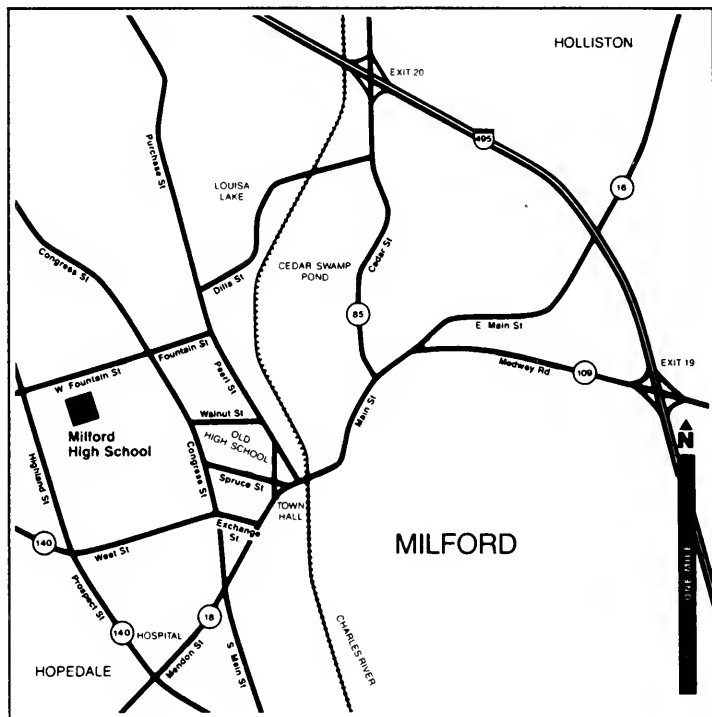


Marshfield High School
Forest Street

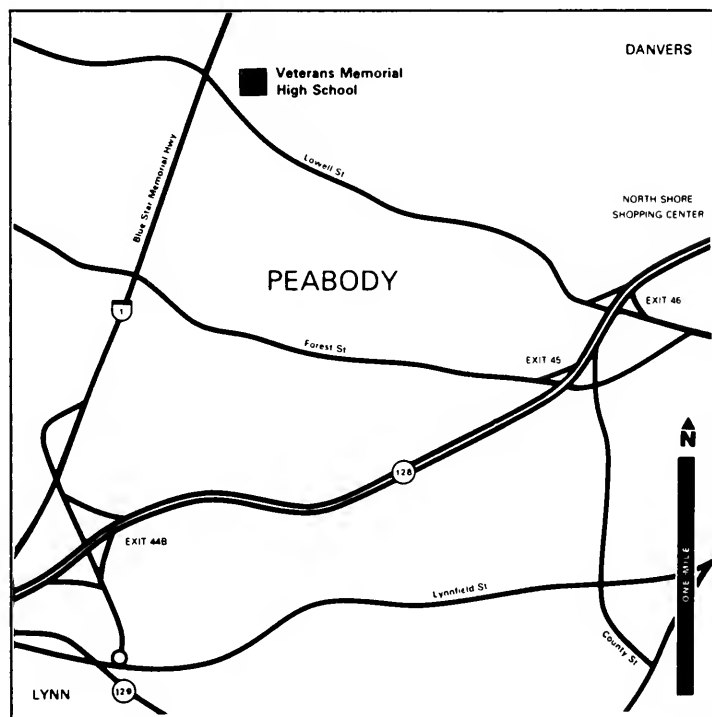


Milford High School

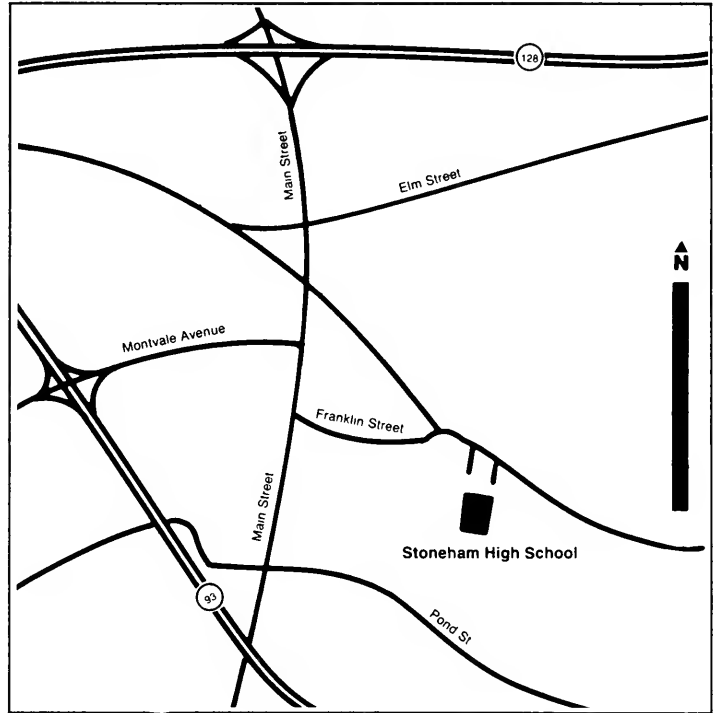
31 West Fountain Street

**Peabody Veterans Memorial High School**

485 Lowell Street



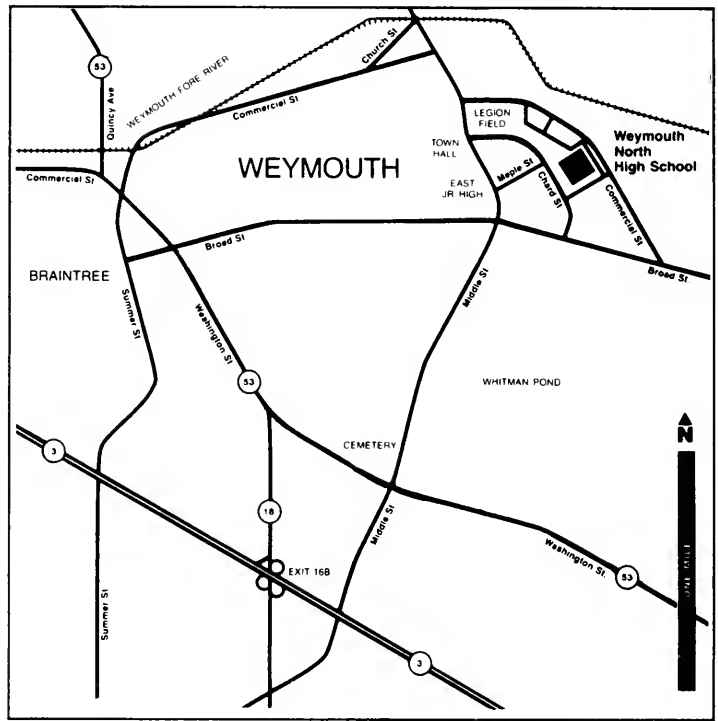
NEW LOCATION!
Stoneham High School
 Franklin Street



Westwood High School
 200 Nahatan Street



Weymouth North High School
1051 Commercial Street



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Delivery of Services

The University assumes no liability, and hereby expressly negates the same, for failure to provide or delay in providing educational or related services or facilities or for any other failure or delay in performance arising out of or due to causes beyond the reasonable control of the University, which causes include, without limitation, power failure, fire, strikes by University employees or others, damage by the elements, and acts of public authorities. The University will, however, exert reasonable efforts, when in its judgment it is appropriate to do so, to provide comparable or substantially equivalent services, facilities, or performance, but its inability or failure to do so shall not subject it to liability.

The Northeastern University catalog contains current information regarding the University calendar, admissions, degree requirements, fees, and regulations, and such information is not intended to be and should not be relied upon as a statement of the University's contractual undertakings.

Northeastern University reserves the right in its sole judgment to promulgate and change rules and regulations and to make changes of any nature in its program, calendar, admissions policies, procedures and standards, degree requirements, fees, and academic schedule whenever it is deemed necessary or desirable, including, without limitation, changes in course content, the rescheduling of classes, cancelling of scheduled classes and other academic activities, and requiring or affording alternatives for scheduled classes or other academic activities, in any such case giving such notice as is reasonably practicable under the circumstances.

Northeastern will do its best to make available to you the finest education, the most stimulating atmosphere, and the most congenial conditions it can provide. But the quality and the rate of progress of your academic career is in large measure dependent upon your own abilities, commitment, and effort. This is equally true with respect to

professional advancement upon completion of the degree or program in which you are enrolled. The University cannot guarantee that you will obtain or succeed at any particular job; that will depend upon your own skills, achievement, presentation, and other factors such as market conditions at that time.

Similarly, in many professions and occupations there are increasing requirements imposed by federal and state statutes and regulatory agencies for certification or entry into a particular field. These may change during the period of time when you are at Northeastern, and they may vary from state to state and from country to country. While the University stands ready to help you find out about these requirements and changes, it is your responsibility to initiate the inquiry because the University has no other way of knowing what your expectations and understandings are.

In brief, the University is there to offer you educational opportunities and to assist you in finding the direction in which you want to steer your educational experience. But you are a partner in this venture with an obligation and responsibility to yourself.

Antidiscrimination Policy

Northeastern University is committed to a policy of equal opportunity to all students and employees without regard to race, color, religion, sex, sexual preference, national origin, or handicap or veteran status. The University prohibits discrimination in all matters involving admission, registration, and all official relationships with students, including evaluation of academic performance.

Equal Opportunity Employment Policy

Northeastern University is an equal opportunity employer. It is institutional policy that there shall be no discrimination against any employee or applicant for employment because of race, color, religion, sex, age, sexual preference, national origin, or handicap or

veteran status.

Northeastern University also prohibits discrimination against any employee regarding upgrading, demotion or transfer, layoff or termination, rates of pay or other forms of compensation, and selection for training. In addition, the University adheres to Affirmative Action guidelines in all recruitment endeavors.

Further, Northeastern will not condone any form of sexual harassment, which is defined as the use of sexual advances, requests for favors, and other verbal or physical conduct of a sexual nature as an explicit or implicit condition of employment, as the basis for employment decisions, or when such conduct interferes with an individual's work performance by creating an intimidating, hostile, or offensive work environment.

Inquiries concerning our equal opportunity policies may be referred to the University Title IX Coordinator/Compliance Officer for Section 504 of the Rehabilitation Act of 1973, Affirmative Action Office, 175 Richards Hall, 617-437-2133.

Office of Services for the Handicapped

The Office of Services for the Handicapped (OSH) provides a variety of support services and general assistance to all of Northeastern's disabled students and employees. The University's efforts to comply with the Rehabilitation Act of 1973 are coordinated by Ruth Bork, OSH director, 5 E11 Center, 617-437-2675.

Family Educational Rights and Privacy Act

In accordance with the Family Educational Rights and Privacy Act of 1974, Northeastern University permits its students to inspect their records wherever appropriate and to challenge specific parts of them when they feel it necessary to do so. Specific details of the law as it applies to Northeastern are printed in the Student Handbook and are distributed annually at registrations of University College and the graduate schools.

Emergency Closing of the University

Northeastern University has made arrangements to notify students, faculty, and staff by radio when it becomes necessary to cancel classes because of extremely inclement weather. AM radio stations WBZ (1030), WEEI (590), WHDH (850), WRKO (680), and FM stations WBCN (104.1), and WROR (98.5) are authorized to announce the University's decision to close. The TTY telephone number (a teletype machine) for the hearing impaired only is 437-8516. Since instructional television courses originate from live or broadcast facilities at the University, neither the classes nor the courier service operate when the University is closed.

Disclaimer

Tuition rates, all fees, rules and regulations, and courses and course content are subject to revision by the President and the Board of Trustees at any time.

Accreditation

Northeastern University is accredited by the New England Association of Schools and Colleges, Inc., which accredits schools and colleges in the six New England states. Accreditation by the Association indicates that the institution has been carefully evaluated and found to meet standards agreed upon by qualified educators. The undergraduate business programs offered by Northeastern University are accredited by the American Assembly of Collegiate Schools of Business.

Northeastern University's Mission

Northeastern University's mission, as a large urban university founded on the cooperative model of education, is to provide individuals with the opportunity for upward mobility through excellence in education. The University achieves its mission through curricula that value equally knowledge for its own sake, knowledge as a means to success in the workplace, and knowledge as a cornerstone of per-

sonal achievement and satisfaction.

Achieving Northeastern University's mission requires excellence in teaching, and teaching remains the central activity of Northeastern's faculty. By offering undergraduate and graduate programs that are rigorous, relevant, and rewarding, the University provides a solid structure for educational excellence. Northeastern University is also committed to the search for knowledge through the scholarly and artistic undertakings of its faculty and students.

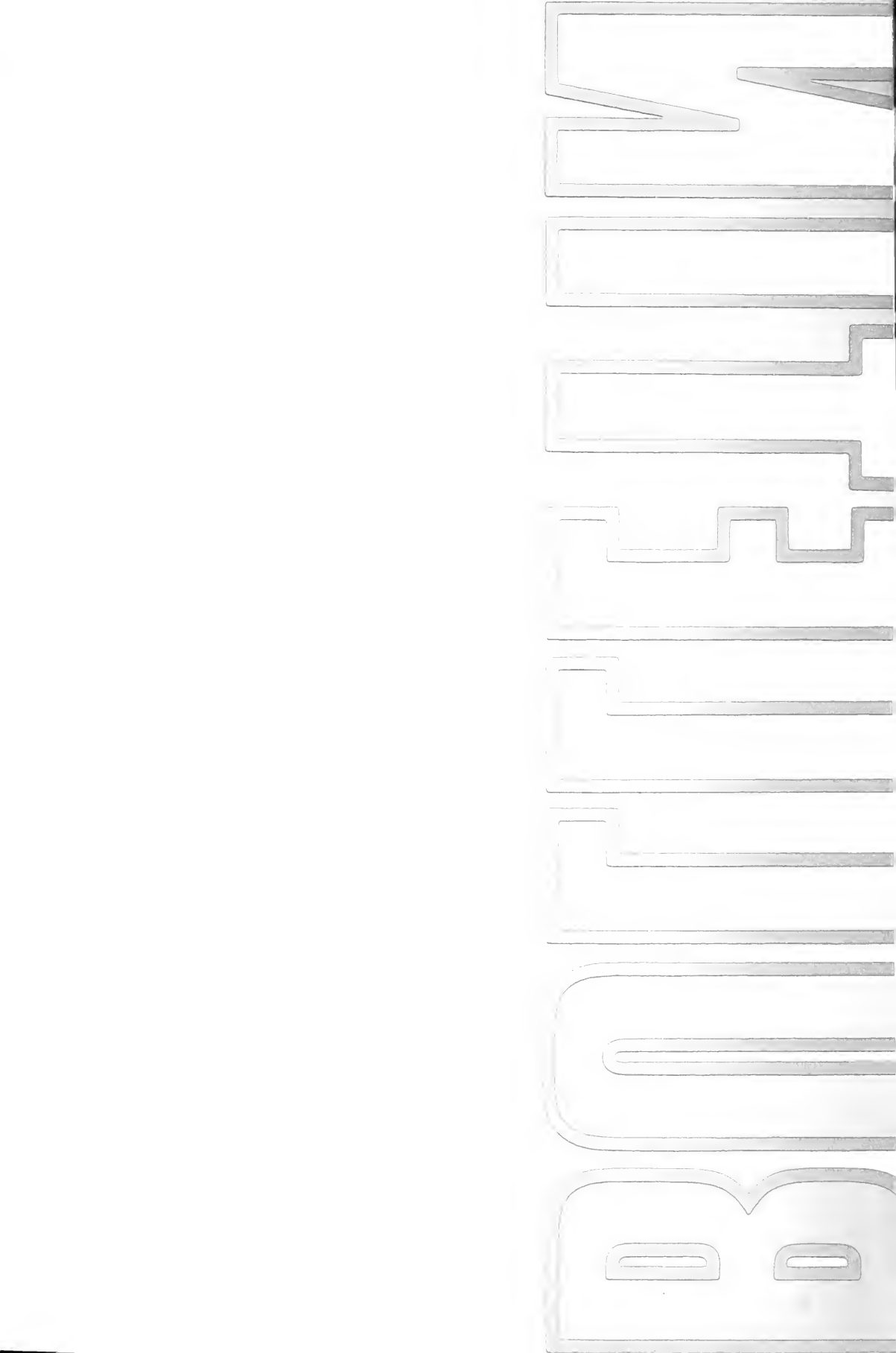
A central mandate of Northeastern University is to offer students the opportunity to apply directly lessons of the classroom and laboratory to the workplace through cooperative education. For three-quarters of a century, cooperative education has been the keystone of Northeastern's uniqueness. As an increasing percentage of the nation's population enters the workforce, and new technologies continue to change the nature of work, the University has rededicated itself to helping the cooperative plan keep pace with those changes.

Northeastern University is committed to serving the educational needs of a diverse student population in an amenable physical environment. The University believes that its mission can be achieved only if the student body is not limited by economic status, cultural or racial background, geographic origin, sex, or age. Northeastern has a long history of serving the educational needs of the non-traditional student, providing degree and non-degree programs for people whose circumstances prevent them from following the standard college regimen.

Looking beyond the confines of the campus, Northeastern University is determined to maintain and strengthen its reputation as a friend to the City of Boston and a partner of the Commonwealth of Massachusetts. The University's obligation to serve the community of which it is an integral part is fulfilled primarily through the educational enterprise. Through its numerous outreach programs, the

University has made striking contributions to the community in the applied social sciences, in high technology, and in the arts. Northeastern University will continue to contribute in these and other ways to the region's overall quality of life and its economic vitality.





Northeastern University

1989–1990

Undergraduate Bulletin

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360 Huntington Avenue
Boston, Massachusetts 02115

Message from the President

Northeastern University, located in the heart of Boston, is an exciting, vibrant place to pursue a college education. I am proud and delighted to introduce the University to you.

At Northeastern, all our efforts are directed toward the individual student's academic achievement, career development, and social and intellectual growth. We are dedicated to serving students who seek to graduate from college already prepared to take their places in a productive economy as well as to serving students who seek to graduate from college with a broad foundation for a variety of careers and for intelligent citizenship.

With the nation's increased demand for an educated, well-trained workforce, Northeastern prepares people to be productive contributors to their own and to society's economic well-being. At the same time, the University provides students with a broad-based understanding of cultural, moral, and artistic values, because economic well-being alone is insufficient to productive lives and human happiness.

Cooperative education, linking the real world of practical experience with an academy of scholars and teachers, represents Northeastern's distinctive edge. The strength of co-op is its close connection with the world of work and with the needs of students.

Northeastern's practical approach to a college education complements the University's emphasis on academic life. We offer a broad spectrum of liberal arts and professional programs taught by a distinguished faculty dedicated to excellence in teaching, innovation in scholarship, and creativity in research.

Each year students graduate from Northeastern with a head start on their careers and a good sense of themselves and their relationship to the community, enhanced and strengthened by new knowledge, new awareness, and new skills that will form the basis of personal achievement and satisfaction in the real world. In providing an environment for individual growth and achievement, the University aims to fulfill its historic mission of offering students the opportunity for upward mobility through educational excellence.

I hope you will find the information in the *Undergraduate Bulletin* helpful in acquainting you with Northeastern University and its rich array of programs.

John A. Curry
President

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Academic Calendar 1989–1990

September 1989

4	Monday	Labor Day. University closed.
5–8	Tuesday–Friday	Final examinations for Basic Colleges.
11–19	Monday–Tuesday	Division A vacation.
14	Thursday	Fall Commencement.
18	Monday	Orientation for freshmen and transfer students.
20	Wednesday	Upperclass registration (Division A).
20–22	Wednesday–Friday	Continuation of course advising, course registration, course drop/add periods, and orientation for college day programs.
25	Monday	Classes begin in Basic Colleges for fall quarter, 8:00 a.m.

October 1989

9	Monday	Columbus Day. University closed.
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November 1989

11	Saturday	Veteran's Day. University closed.
23–25	Thursday–Saturday	Thanksgiving Day recess.

December 1989

11–15	Monday–Friday	Final examinations for Basic Colleges.
18–January 1	Monday–Monday	Christmas vacation.

January 1990

1	Monday	New Year's Day. University closed.
2	Tuesday	Orientation and registration for new freshmen and transfer students; registration for continuing September freshmen and returning upperclass students.
3	Wednesday	Registration, orientation, and course drop/add continues until 12:00 noon.
4	Thursday	Classes begin in Basic Colleges for winter quarter, 8:00 a.m.
15	Monday	Martin Luther King, Jr.'s Birthday. University closed.

February 1990

19	Monday	Presidents' Day. University closed.
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March 1990

19-23	Monday-Friday	Final examinations for Basic Colleges.
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26-31	Monday-Saturday	Division B vacation.
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April 1990

2	Monday	Orientation and registration for transfer students, continuing freshmen, and returning upperclass students.
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3	Tuesday	Classes begin in Basic Colleges for spring quarter, 8:00 a.m.
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16	Monday	Patriots' Day. University closed.
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May 1990

28	Monday	Memorial Day. University closed.
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June 1990

11-15	Monday-Friday	Final examinations for Basic Colleges.
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16	Saturday	Commencement.
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18-23	Monday-Saturday	Division A vacation.
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25	Monday	Registration for Divisions B and D and January freshmen (quarter three). Beginning of summer quarter.
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26	Tuesday	Basic College classes begin for summer quarter, 8:00 a.m.
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July 1990

4	Wednesday	Independence Day. University closed.
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September 1990

3	Monday	Labor Day. University closed.
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4-7	Tuesday-Friday	Final examinations for Basic Colleges.
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10-18	Monday-Tuesday	Division B vacation.
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13	Thursday	Fall Commencement.
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17	Monday	Beginning of 1990-91 academic year. Orientation week for new students. Registration and advising week for all returning upperclass students and all new students.
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24	Monday	Classes begin in Basic Colleges for fall quarter, 8:00 a.m.
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Note: Calendar dates are subject to change. The University community will be notified if such changes are necessary.

The Urban University

History



Northeastern University is incorporated as a privately endowed nonsectarian institution of higher learning under the General Laws of Massachusetts. The state legislature has given the University general degree-granting powers. The University is governed by a Board of Trustees who are elected by and from the Northeastern University Corporation, which is composed of almost two hundred distinguished business and professional men and women.

The story of Northeastern's growth constitutes a history of achievement and commitment to the spirit that shaped it originally. The University traces its roots to 1886, when the Boston YMCA decided to establish an Evening Institute for Young Men. Guided by their belief that the opportunity to acquire a quality higher education should be available to all, they aspired to determine community educational needs and provide programs to address them.

One of the first steps was to offer evening classes at reasonable cost for those who worked during the day. On October 3, 1898, the Department of Law of the YMCA was

founded—the first program offered by what came to be Northeastern University. Six years later, the Evening Law School was incorporated and given the right to grant a degree in law.

A highly innovative project of the Evening Institute—one essential to the foundation of Northeastern—was the 1909 opening of the Cooperative Engineering School. In one of the earliest cooperative education experiments in the nation, the daytime program alternated classroom study with work experience. The Cooperative Plan of Education has since been expanded and adopted by all of the University's Basic Colleges as well as by many programs at the graduate level.

In 1916, the newly incorporated Northeastern College of the Boston YMCA comprised the Evening Law School, the School of Commerce and Finance, the Cooperative Engineering School, the Polytechnic School, and a number of affiliated schools. The following year, Frank Palmer Speare was inaugurated as the college's first president. Five years later, the school was renamed Northeastern University of the Boston YMCA. After the College of Business was established in 1922, a critical need for space prompted the University to begin acquiring land on and around Huntington Avenue.

Although Northeastern University moved toward financial and administrative independence during the 1920s and early 1930s, it was not until 1935 that the words “of the Boston YMCA” were dropped from its official name, the same year the College of Liberal Arts was established.

Carl Stephens Ell became the University's second president in 1940. Women students were admitted to the day colleges beginning in 1943. Following World War II, many veterans attended Northeastern on the G.I. Bill. During the 1950s, the University responded to the nation's increased need for teachers by establishing the College of Education.

In 1959, Asa Smallidge Knowles became the University's third president. The next decade was a period of great expansion at Northeastern. University College was established in 1960 as a further commitment to meeting the needs of adult, evening, and part-time students. The college offered programs at several satellite locations, including the Dedham campus and the Burlington campus.

The New England College of Pharmacy merged with Northeastern in 1962. Later expansion led to the creation of the College of Pharmacy and Allied Health Professions. The University's continued interest in health-service professions was reinforced in 1964, when the College of Nursing was established and Boston-Bouvé College, formerly Bouvé-Boston of Tufts University, joined Northeastern. The late 1960s saw the founding of the College of Criminal Justice and the reopening of the School of Law.

Kenneth Gilmore Ryder, Northeastern's fourth president, was inaugurated in 1975. Important events in the early 1980s included the merger of Boston-Bouvé College and the College of Education into Boston-Bouvé College of Human Development Professions; the founding of the College of Computer Science; and the establishment of the Carl S. Ell Presidential Scholarship Program. In 1983, the University became the first institution in New England to telecast engineering courses live to regional corporations in the Boston area's Route 128 high-technology belt.

On July 1, 1989, John Anthony Curry succeeded to the presidency, becoming the first graduate of Northeastern to hold the office of president. Bringing to this position a long history of service to the University, President Curry is committed to cultivating each individual student's academic achievement, career development, and social and intellectual growth.

The Boston Environment

It is no accident that one out of every five Massachusetts students chooses Northeastern University for his or her college education. In addition to its innovative system of cooperative education, Northeastern offers students access to the educational, cultural, professional, historical, and recreational resources of the Boston area. The University encourages students to explore these opportunities to the fullest.

The home of more than sixty colleges and universities, Greater Boston offers a profusion of academic activity. Within walking distance of Northeastern are the Massachusetts Institute of Technology, Boston University, Simmons College, Emmanuel College, Massachusetts College of Art, and Harvard Medical School. Also close by are Boston's world-renowned hospitals and their affiliated research facilities, where many students fulfill co-op requirements.

Located throughout metropolitan Boston, many of America's leading corporations and institutions provide Northeastern students with meaningful co-op assignments. Their offices and laboratories become classrooms for students participating in the world of work firsthand.

Among the hundreds of cultural attractions in Boston are the Museum of Fine Arts and Symphony Hall, both adjacent to the Northeastern campus. The former provides free admission to its permanent collections and special exhibitions for more than sixteen thousand Northeastern undergraduates. Also neighbors of Northeastern are the Isabella Stewart Gardner Museum, the Institute of Contemporary Art, the New England Conservatory of Music, and the Boston Public Library. A short ride on mass transit brings students to the Museum of Science, Hayden Planetarium, and the theatre district. Northeastern's own *nuArts* performance series brings artists from all over the world to campus.

Best known as the birthplace of the American Revolution, Boston attracts thousands to the historical landmarks of its Freedom Trail every year. Among them are Paul Revere's House, the U.S.S. Constitution ("Old Ironsides"), Faneuil Hall, Beacon Hill, and the Boston Common. In recent years, a Harborwalk has introduced visitors to sites on the Boston Waterfront, including the Old State House and the Boston Tea Party Ship and Museum.

Boston revels in the competition of its professional sports teams—the Red Sox, Celtics, Bruins, and Patriots—and Northeastern students join in the excitement at Fenway Park, Boston Garden, and Sullivan Stadium. Each spring, runners from all over the world gather to participate in the Boston Marathon. In addition, the Charles River and the slopes of northern New England tempt Northeastern students with some of the best crewing and skiing in the country.

The shops and restaurants of Boston's famous Quincy Market typify the city's blend of the historic and contemporary. Boston is the bustle of Haymarket and Chinatown, the grace of the State House and the Public Garden, and the striking architecture of Government Center, Copley Place, and the Christian Science Center. The John Hancock Observatory and the Prudential Skywalk, both a short walk from the Northeastern campus, offer excellent views of the city, old and new.

Campus Highlights

Northeastern University is located in a Boston neighborhood known for its many cultural and educational institutions. Symphony Hall (home of the Boston Symphony Orchestra), Horticultural Hall (home of the Massachusetts Horticultural Society), the New England Conservatory of Music, the Museum of Fine Arts, Simmons College, and the Isabella Stewart Gardner Museum are all nearby. The Fenway area, with its beautiful rose garden, bicycle and jogging paths, and Fenway Park, abuts our campus.

The campus comprises fifty-two buildings in an area of fifty-five acres. The buildings are organized in a formal grid, creating a series of landscaped courtyards and open corridor spaces. The vertical lines of the more centrally located buildings are the dominant theme of the campus architecture. A series of interconnecting walkways and secondary streets runs throughout the campus, linking the central academic area and dormitories as well as the athletic facilities and parking areas. A network of underground corridors connects many of the buildings, providing routes that are especially convenient during periods of inclement weather.

The front door to the campus is the Quadrangle, which faces Huntington Avenue, a major thoroughfare that divides the academic buildings in the southern portion of the campus from the dormitories in the north and provides convenient public transportation to downtown Boston and other areas of the city. In addition, the Quad is the location of Blackman Auditorium, site of many lectures and performances, and of the Ell Student Center, home of student clubs, offices, and a ballroom.

As the University has grown, renovations have been completed and new buildings have been added to the central academic area; parking and recreational areas have been relocated on the periphery of campus. One such new building is the addition to the School of Law—a dramatic one-story structure that opens onto a sunken garden. The landscaped plaza on its roof is a focal point and gathering spot for the west campus area.

Cullinane Hall, the University's oldest building, has been completely renovated and now provides a stimulating environment for the College of Computer Science.

Matthews Arena, located on the periphery of campus, is the oldest indoor ice-hockey arena in the United States. With extensive renovations completed in 1983, it is now used for hockey and collegiate sports, men's and women's varsity basketball, and community athletics. It supplements the athletic and recreational facilities available to Northeastern students in the Cabot-Barletta field house, gymnasium, and swimming-pool complex.

Another example of the University's development is the Snell Engineering Center, a building that accommodates the Departments of Industrial Engineering and Information Systems, Civil Engineering, Chemical Engineering, Mechanical Engineering, and the School of Engineering Technology. The Snell Center adjoins the Dana Research Center, home of the Departments of Physics and Electrical and Computer Engineering, creating an impressive academic complex.

Serving as a second entry point to the campus, the relocated Orange Line of the MBTA has two stops convenient to Northeastern—the Massachusetts Avenue and Ruggles Street stations. The Ruggles Street subway station also coordinates local bus routes and a suburban commuter rail line.

Located at this new entrance is the Ruggles Building, once a mill. Extensive renovation has provided general classrooms and studio space for the performing and visual

arts and has significantly expanded administrative office space. Also in this developing area of the campus is a 995-car parking garage.

Groundbreaking for the \$30,000,000 library/resource center took place in 1987. During the next five years, the University plans to build a new residence hall for undergraduate students and additional facilities for engineering and the sciences. The University and the state are working on a joint project of a recreational center and track to be located near the new parking garage.

Visitor Information

Hours

Monday–Friday

8:00 a.m.–6:00 p.m.

At the Visitor Information Center, 115 Richards Hall, staff members answer questions, give directions, and provide advice about the University and its programs to visitors, students, staff, and faculty. The University map, the *Northeastern Alumni Magazine*, the *Northeastern Edition*, and other Northeastern catalogs and brochures are available.

Visitors to Northeastern may request a University visitor pass, which entitles them to a number of special services and premiums, including an information kit, discounts at the University Bookstore and University events, complimentary posters, and free passes to the nearby Museum of Fine Arts.

A notary public is available at the center from 8:30 a.m. to 4:30 p.m., Monday through Friday.

For an up-to-the-minute recorded listing of University activities and events of interest to the University community and the general public, telephone the Northeastern University events line at 617-437-3281.

Undergraduate Admissions

Department of Undergraduate Admissions



139 Richards Hall

Telephone: 617-437-2200

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Sophia K. Schueler, B.A.

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Richard V. Wade, B.A.

To find a college or university that will suit personal needs and professional interests—a place where a student can feel at home and make sound preparation for a future career—is a goal of all who plan to continue their education beyond secondary school. The goal can be achieved in a number of ways: by talking with enrolled students, faculty, and alumni; by reading catalogs; by viewing videos; and by visiting college campuses. In fact, a college campus visit should be high on a prospective student's list of priorities. Northeastern's Committee on Admissions extends a cordial welcome to all prospective freshmen and to all transfer students and has planned a series of on-campus experiences to make a visit as worthwhile as possible.

■ The Admissions Conference

Students have many questions about Northeastern—its programs of study, its support services to students, and the Cooperative Plan of Education. For this reason, the Committee on Admissions sponsors a series of orientation conferences to help applicants become better acquainted with the University. Offered at 10:00 a.m. and 2:00 p.m. on Mondays and Fridays from October 1 through May 1 (except for legal holidays), these conferences include presentations by an admissions counselor, an informal question-and-answer period, and a multimedia presentation.

Special sessions are also held in the summer between July 1 and September 1. For further information, contact the Department of Undergraduate Admissions.

■ Guided Tours

Student-guided tours of the campus are usually held daily, Monday through Friday, at 11:00 a.m. and 3:00 p.m. Both the admissions conference and the tour should be scheduled in advance by writing or calling the Department of Undergraduate Admissions. The opportunity to visit the University's facilities and to observe student life on campus is one important way to learn about Northeastern. To set up a conference or tour, telephone 617-437-2211.

■ The Interview

Although not required, a personal interview is generally regarded as an appropriate opportunity for students with special questions to meet with an admissions counselor. In studying the secondary school record, the counselor may discover some factor that merits further explanation. In this event, the applicant may be asked to arrange a visit to the Department of Undergraduate Admissions. The interview may be held at the request of the student or the counselor. Contacts with Admissions personnel will be more beneficial if the *Northeastern University Bulletin* has been read carefully before the personal interview.

■ College Visit Program

Prospective students and their parents have the opportunity to visit any one of the basic undergraduate colleges and schools through the College Visit Program. Students are taken on a tour of the facilities and learn firsthand about the college's academic programs by meeting informally with the faculty, administrators, and current students. The College Visit Program is scheduled so that visiting students and their parents may also participate in the Admissions Conference and University Tour on the same day.

Special Note Northeastern does not hold Saturday classes for students in the undergraduate colleges; for that reason, a weekday visit to the University is recommended. Special Saturday appointments may be arranged on a limited basis. However, the University is closed on Saturday during the months of July and August.

■ **Open Houses**

During late winter and early spring, each of Northeastern's undergraduate colleges invites prospective students and their parents to an Open House. These informal meetings provide an overview both of the University and of individual colleges. Students are able to meet members of the faculty and current students to learn more about academic program offerings and to tour the campus and facilities.

At the Open House meetings, representatives of various University departments provide a variety of information in areas including admissions, cooperative education, financial aid, residential life, career development and placement, and student activities. The representatives are happy to answer any questions the students and their parents might have.

■ **Prospectuses**

The Department of Undergraduate Admissions produces a prospectus for each of the undergraduate colleges. Designed to present prospective students with a comprehensive picture of an individual college, these publications are also a graphic illustration of the University's unique integration of academic study and cooperative education assignments.

Information about academic programs and major areas of concentration, cooperative education opportunities and employers, admissions procedures, University resources and activities, and the campus and Boston environment is provided in these publications.

■ **Videocassettes**

In addition to providing students with printed material describing Northeastern's academic programs, the Department of Undergraduate Admissions has produced a series of videocassettes that are available to prospective students upon request. The videocassettes offer a general introduction to the University as well as an overview of each of the undergraduate colleges.

■ **Computer Diskettes**

Computer diskettes are also available to prospective students upon request. Capsule information about admissions, academic programs, cooperative education, financial aid, housing, and student activities is provided in a concise format. The diskettes are compatible with most personal computers used in schools or homes. Students need only provide the computer make and model to receive a diskette.

General Requirements for Entrance

An applicant for admission to Northeastern University has, ideally, completed a challenging secondary school program—one that includes courses in English, foreign language, mathematics, laboratory science, and history. Proficiency in a foreign language is especially important for students entering the College of Arts and Sciences. But the overall school record has importance in itself, both as an indication of achievement in subjects critical to university study and as a reflection of a wise choice of electives. The high school transcript should provide clear evidence of the sound study habits so vital to success in higher education. Candidates should also have broadened their reading outside of class and developed an ability to communicate ideas effectively.

Today's high school students have had the advantage of many innovations that have greatly enriched their experience—independent study, small-group seminars, research projects, and off-campus experiences related to community service or future vocations. Northeastern is interested in the growth of the work-study concept in many secondary schools, and the Committee on Admissions looks favorably on the variety of these worthwhile experiences.

■ **Preparation for Engineering, Computer Science, Sciences and Mathematics, and Allied Health Professions**

Evidence of special aptitude and the highest possible level of preparation in the sciences and mathematics are required for entrance to the following programs of study:

College of Arts and Sciences

Biology, Chemistry, Geology,
Mathematics, Physics,
Applied Physics

**Boston-Bouvé College of Human
Development Professions**

Athletic Training
Cardiovascular Health and Exercise
Physical Education Teacher Preparation
Physical Therapy
School and Community Health Education

College of Computer Science

Bachelor of Science program

College of Engineering

All programs

School of Engineering Technology

Bachelor of Engineering Technology program

College of Nursing

Bachelor of Science program

College of Pharmacy and Allied Health Professions

All programs

Applicants are encouraged to complete a full sequence of science and mathematics courses if possible. In science, such a sequence usually includes a full academic year of study and laboratory work in biology, chemistry, and physics; and, in mathematics, geometry, algebra I and 2, and a fourth year of trigonometry and/or analysis. Applicants to programs emphasizing mathematics and science also need courses in the social sciences and humanities to be fully prepared for advanced study.

■ **Preparation for Study in Business Administration**

Candidates for study in this diversified discipline must have completed a strong preparatory program in high school that emphasized the humanities, social sciences, and natural sciences. Applicants must also have several years of mathematics, including Geometry and Algebra I and II.

■ **Preparation for Study in the Arts and Humanities, the Social Sciences, Teaching, and Criminal Justice**

Candidates for admission who have enjoyed their greatest success in the study of the humanities and social sciences may choose to apply for admission to one of the programs below.

College of Arts and Sciences In addition to the science programs listed, the college offers programs in the arts and humanities with majors in art (including concentrations in architecture and visual and media design), theatre and dance, English, journalism (the School of Journalism is a unit of the College of Arts and Sciences), modern languages (French, German, Italian, Russian, and Spanish), music, philosophy, and speech communication; and in social sciences with majors in African-American studies, economics, history, human services, linguistics, political science (including a concentration in public administration, and law and legal studies), psychology, and sociology/anthropology.

Boston-Bouvé College of Human Development Professions Students seeking certification as teachers in early childhood education or elementary education or those majoring in human services, recreation management, or therapeutic recreation should, through their high school courses, have demonstrated interest in the behavioral and social sciences.

College of Criminal Justice By its very nature, the program in criminal justice requires a strong base of liberal arts study before professional courses are introduced. Applicants for admission should therefore demonstrate the ability to succeed in their study of the behavioral, social, and human services.

■ Entrance Examinations (Freshman Applicants)

Research indicates that the best single predictor of college academic success is achievement in secondary school. This factor, together with recommendations from the school counselor, weighs most heavily in the evaluation process. Although the Scholastic Aptitude Test and three achievement tests of the College Board are required, they are only one factor in the admissions process. The Committee on Admissions recognizes that these test results do not measure such qualities as determination, imagination, and leadership.

English composition has to be one of the three required achievement tests. Students may choose the other two tests in subjects in which they feel most confident. Students whose native tongue is not English should substitute the Test of English as a Foreign Language (TOEFL) for the English composition test. No single schedule of testing is recommended, but applicants are advised to take subject matter tests while studying those subjects.

For further information about College Board Examinations, consult a school guidance counselor or write directly to:

The College Board
P.O. Box 592
Princeton, NJ 08540

or

P.O. Box 1025
Berkeley, CA 94701

The American College Testing Program may be substituted for the College Board Testing Program. For further information, write to:

American College Testing Program
P.O. Box 168
Iowa City, IA 52243

Admissions counselors also will be glad to answer questions about these testing programs. To meet admissions criteria, applicants with disabilities may make alternative testing arrangements.

■ Advanced Placement

The University grants advanced placement credit to those applicants with a score of 3 or better in their advanced placement examinations. Applicants may take the examinations in the following subjects: art (history, studio-general, studio-drawing), biology, chemistry, computer science (A, AB), economics (microeconomics, macroeconomics), English (language, literature), French (language, literature), German (language), government and politics (comparative, United States), history (European, United States), Latin (Virgil, Catullus-Horace), mathematics (calculus AB, BC), music (listening-literature, theory), physics (B, C mechanics-C electricity, magnetism), and Spanish (language, literature).

Applicants who wish to submit scores for advanced placement are required to take the Advanced Placement Tests of the College Board in May.

■ College-Level Examination Program

The University cooperates with the College Board in its College-Level Examination Program. CLEP provides a national program of five general examinations and thirty subject examinations to evaluate nontraditional college-level education. Qualified students are encouraged to take the general and/or subject examinations of CLEP so that college credit may be allowed upon entrance. In general, the Committee on Admissions accepts the score range recommendations of the College Board. Northeastern University has been designated a CLEP Testing Center. For further information, contact the Counseling and Testing Center at 302 Ell Student Center, 617-437-2142.

Applying for Admission and Plans of Admission

■ Entry Dates

Northeastern University admits qualified freshmen to all programs in September. The University also has a January entrance date for most of its programs. Entrance dates for transfer students vary by program; many admit students at the beginning of each quarter.

The application should be filled out properly, signed, and forwarded to the Dean of Admissions, 139 Richards Hall, Northeastern University, Boston, MA 02115, together with a nonrefundable \$30 application fee. Checks should be made payable to Northeastern University. This fee may be waived in cases of extreme hardship as endorsed by the candidate's secondary school counselor or social worker. It is to the student's advantage to submit the application for admission promptly. Students are also responsible for making sure that their transcripts and College Board scores are submitted to the University.

■ Program Selection

Because many have difficulty in selecting a program of studies, the University allows students to explore alternative fields or tailor their programs to personal goals. Freshmen must indicate a choice of college and, in some cases, a major. In most colleges, students do not have to make a definite choice of major, concentration, or emphasis until the end of the freshman year. In some programs, the decision may be delayed until the end of the sophomore year. Students are provided with additional assistance in planning their major through experience gained by participating in the Cooperative Plan of Education.

■ Rolling Admission Plan

Under Northeastern's Rolling Admission Plan, decisions on admission are made as soon as all of the required credentials (including first-marking-period senior grades and College Board test scores) have been submitted and reviewed. In all cases of acceptance, candidates must complete their senior year of high school.

Students should note that enrollments are limited in some programs in which the number of applications is expected to exceed campus resources.

■ Deferred Admission Plan

Accepted students who wish to participate in the Deferred Admission Plan will be asked to describe the activities they plan for the year preceding enrollment. Students may choose this plan for a variety of reasons, such as travel, health problems, or work.

■ Early Admission—Juniors, Second-Semester Seniors

In certain cases, students may enroll at Northeastern prior to high school graduation. Such students may enroll either in September or in January, thereby reducing the time to complete degree requirements by one year. A special form provided by the Committee on Admissions requires the endorsement of the school principal or guidance counselor for early admission.

■ University Honors Program

The University offers qualified students in each of its Basic Colleges the opportunity to participate in a comprehensive honors program designed to foster and recognize superior intellectual development and achievements. Based on criteria established by an individual college for its own majors, students may be invited into the program as they enter the University or at any point during their college careers. Students may also be recommended for participation in the program or in its individual components by their faculty advisers and/or the honors committee of their college.

The program consists of both academic and nonacademic components. Various special limited-enrollment sections of many first- and second-year required and elective courses is offered each quarter, providing greater depth, sophistication, or extension than their regular equivalents. Once completed, these more challenging courses may be used to fulfill specified curricular requirements or may serve as electives.

Certain other courses have been organized to permit students to undertake individual advanced-level work and to receive an honors designation on their transcripts.

In addition, a selection of honors seminars is offered on interdisciplinary subjects for which honors students may enroll as part of their course load or as a free overload. Junior-senior honors programs, based on individual or small-group research projects under the direction of distinguished faculty, are available to qualified students.

Successful completion of any honors course is noted clearly on students' individual transcripts, and successful completion of the program's various academic requirements can result in Honors Program Distinction at graduation. The program makes some extra demands on participating students, but the smaller and more homogeneous class composition, the heightened levels of student-faculty interaction, and challenging intellectual content make the University Honors Program a stimulating educational opportunity. (For quality-point equivalents of honors, see page 55.)

Beyond the courses, honors students may avail themselves of a wide variety of opportunities and services. These include eligibility for university honors scholarships; a special liaison with the Department of Cooperative Education; honors housing options; honors faculty advisers; individualized course selection and registration privileges; an honors lounge and computer-equipped study area; and a range of social and

cultural activities, including speakers and film series, colloquia, and excursions of various kinds.

For further information concerning freshman entry into the program, please contact the Department of Undergraduate Admissions. For information concerning the college's criteria for upperclass entry into and retention within it, contact the University Honors Program, 213 Lake Hall, Northeastern University, 360 Huntington Avenue, Boston, MA 02115, or telephone 617-437-2333.

■ **Carl S. Ell Presidential Scholarship Program**

The purpose of Northeastern's Carl S. Ell Presidential Scholarship Program is both to provide recognition to some of the University's finest incoming students and to foster the continuation of their superior academic performance.

Each year a limited number of freshman who have records from high school that exhibit exceptional promise are selected for this academic achievement award. Criteria for selection include high school records, class rank, letters of recommendation from guidance counselors, and College Board test scores.

The Ell Scholars are awarded full freshman-year tuition scholarships. Those who continue to maintain a superior scholastic average during their upperclass years at Northeastern are awarded one-half tuition grants for each subsequent year.

In addition to the awarding of financial assistance, the scholars are provided with a number of opportunities to engage in intellectual exchange on campus, including an invitation to join the Ell Scholars Association, an organization that endeavors to build a community of scholars within the University.

The application deadline for the program is January 1. In most cases, students are notified of their selection as Ell Scholars before February 1.

■ **Bachelor of Arts or Bachelor of Science/Juris Doctor Degree Program**

Northeastern offers a unique joint degree program for aspiring lawyers—the eight-year Bachelor of Arts or Bachelor of Science/Juris Doctor Degree Program. Each year the University admits a limited number of highly qualified freshman into the five-year undergraduate portion of the program.

To be eligible to continue with the three-year law school portion of the program, students must successfully complete their undergraduate course of study, graduate in the top fifteen percent of their class, and score in the top twenty percent of the Law School Aptitude Test (LSAT).

Students who are accepted into the program and who meet the above criteria will be qualified to continue their studies at Northeastern University School of Law. Unique among American law schools, Northeastern University School of Law features cooperative legal education: the blending of legal apprenticeship with intensive academic study. For further information, please contact the Department of Undergraduate Admissions.

■ **Community Financial Aid Grant Programs**

To supplement student earnings from cooperative education experiences and the University's regular student financial aid program, Northeastern has established a number of special community grant programs for disadvantaged students. In all cases, students have to be accepted for admission and complete the University's application procedure for financial aid (see page 37 for complete details) to qualify for one of the special community grant programs. For further information, write to the Department of Undergraduate Admissions.

■ **Five-Year Bachelor of Science/Master of Science Degree Program**

Qualified high school students committed to reaching a high level of success in engineering can now accelerate their progress by entering directly into the College of

Engineering's Five-Year Bachelor of Science/Master of Science Degree Program. This full-time program allows honor students to earn both degrees in five years, and at the same time gain extensive on-the-job experience through the Cooperative Plan of Education.

The B.S./M.S. program is offered by three departments: Electrical and Computer Engineering, Industrial Engineering and Information Systems, and Mechanical Engineering. The program incorporates cooperative education, thereby enabling students to alternate periods of academic work with paid employment in their chosen career field.

Students generally take five courses per quarter and must maintain a 3.2 quality-point average to continue in the program. All students begin with a basic curriculum that includes calculus, physics and labs, computer programming, and chemistry. At the same time, study of the social sciences and humanities broadens their awareness and understanding of the spheres in which they will practice their professions.

■ College of Arts and Sciences Degree Programs

College of Arts and Sciences students may choose the five-year Cooperative Plan of Education or elect to enroll in a traditional four-year degree program.

■ Four-Year Co-op Option

College of Engineering and College of Computer Science students who wish to complete their undergraduate degree in four years may elect to enroll in the Four-Year Co-op Option. Participating students are required to meet with their faculty advisers to arrange an individual academic schedule.

With a curriculum identical to the five-year program, the Four-Year Co-op Option provides students with four, rather than seven, quarters of cooperative education assignments at leading high-technology and engineering corporations across the country and around the world. Average co-op earnings depend on the number of quarters students spend on cooperative education assignments.

■ Alternative Freshman-Year Program

The Alternative Freshman-Year Program was developed in collaboration with University College, a division of Northeastern serving students who seek a flexible course schedule. This degree-track program may be ideal for those students who feel that their high school grades and/or test scores do not reflect their true abilities.

This program is structured to assist students in making the academic and social adjustments necessary for success in college. Working with a counselor, students follow a prescribed curriculum designed to meet their individual needs and to help sharpen their skills in writing, mathematics, and reading comprehension, while gaining confidence in their ability to do college-level work. In addition, the program permits students to sample different areas of study before committing themselves to a specific major.

The full range of counseling services, physical education facilities, and extracurricular programs is generally available to students enrolled in this program. For further information about the Alternative Freshman-Year Program, see pages 208–209.

■ Open Campus Courses

Under Northeastern University's Open Campus Plan, qualified high school students are invited to take full-credit courses at Northeastern while still enrolled in secondary school. Such students can gain a better idea of the collegiate environment while they work toward college credit. For further information, write to the Department of Undergraduate Admissions.

■ Orientation and Registration

The orientation and registration program officially launches each student's academic career at Northeastern.

The administration, faculty, and many upperclass students have planned several days of programs, faculty seminars, meetings, and special events designed to help new students adapt to college life at Northeastern.

In addition to participating in regular registration operations, choosing courses, receiving class schedules, and purchasing books, new students meet with the dean and faculty members of their college, who provide information about academic majors, courses, and careers.

Students may attend "how-to" seminars (how to study successfully, be assertive, make friends), peer-counseling sessions, and many other informative events. The Department of Cooperative Education, for example, plans meetings about job opportunities and school-work experiences.

New students are introduced to members of more than 150 student organizations, some of which they might choose to join. Guided tours of Boston's historical and cultural centers are also available.

■ Skill and Competency Development

Responding to a growing national concern for the improvement of basic writing, numerical, and reading/study skills, the University extends to freshmen in several of its participating colleges the opportunity to enhance the likelihood of academic success through enrollment in compensatory courses.

Selection for such course work is based on the correlation of competency data, derived from specifically prepared testing procedures administered on campus, with precollege academic credentials.

The freshman-year writing sequence, the mathematics sequence, and the Reading/Study Skills course each bears full credit in participating colleges (see page 217).

Instructors, freshman advisers, and the Freshman Affairs staff of the Office of the Dean of Students are ready to assist involved freshmen in achieving success in their endeavors.

■ English-as-a-Second-Language Proficiency Requirement

Before being considered for admission, students whose native language is not English are required to demonstrate some English language proficiency. This can be done by submitting the results of the College Board's Test of English as a Foreign Language (TOEFL), by successfully completing an approved English-as-a-second language course of study, or by being currently enrolled in such a course.

Before they are allowed to enroll in academic course work, all students whose first language is not English are required to take the English Proficiency Test administered by the University's English Language Center. This requirement applies to all non-native speakers regardless of the length of time they have been in the United States or their previous study of English.

The results of this test are used to assign students to appropriate English courses. Students with minimal English language skills are assigned to a noncredit intensive English course. The level of course work required will determine the student's academic schedule.

■ **Special Students**

A limited number of special students may be admitted to the Basic Colleges. Special students are not degree candidates and must meet criteria set by the college to which they are admitted.

Those admitted as special students usually have completed some college-level work. The following are among the applicants who may be considered:

- College or university graduates who need additional course work to prepare or qualify for a graduate program;
- Individuals, recommended by deans or program directors, who need particular formal course work to meet professional requirements for certification;
- Students who need several courses to complete degree requirements at another college or university, provided they have written approval from the appropriate college dean; others who are recommended by deans of the colleges to take courses leading to regular admission. In such cases, special-student enrollment should be limited to one academic quarter.

All special students will be charged a nonrefundable application fee of \$30. Before obtaining and paying for an application, the prospective special student should consult a counselor in the office of the dean of the college offering the course(s) desired. Tuition will be at the quarter-hour rate in effect at the time and must be paid before registration is valid. Special students will be admitted to classes only when space is available.

All special students must obtain approval from the office of the dean of the Basic College in which they wish to enroll prior to each quarter's registration, but they will be required to pay the application fee only once.

Programs for Minority Students

Northeastern University is committed to expanding educational opportunities for minority students of high academic promise and to enrolling a student body reflective of the diverse ethnic and social composition of our society.

To ensure that minority students have the greatest opportunity for success, the University's African-American Institute provides tutorial, counseling, and academic services.

■ **Dr. Ralph J. Bunche Scholars Program**

Northeastern University honors the late Dr. Ralph J. Bunche, Nobel Peace Prize laureate and former undersecretary of the United Nations, by awarding ten Ralph J. Bunche Scholarships annually to black students who have compiled outstanding records of academic achievement and leadership. The Bunche awards are full-tuition scholarships in the freshman year and half-tuition grants in the remaining years of study at the University, provided that the student maintains a superior scholastic average.

Students who believe that they qualify for this award may obtain information and application materials from the Department of Undergraduate Admissions.

■ **Project Ujima**

Project Ujima is an academic support program designed to assist minority students who have demonstrated an ability to succeed in college but who need additional academic assistance, particularly in their freshman year.

The Ujima program provides participants with a variety of support services to develop their academic skills and to foster the growth of a positive attitude toward learning throughout their years at the University. Counseling, tutorials, a reading and study skills course, and educational workshops are examples of some of the supportive activities sponsored by the project. Project Ujima is an academic component of the African-American Institute.

Admission of International Students

The University welcomes qualified students from other countries who are fully prepared to benefit from the educational, cultural, and social opportunities it has to offer. At present, more than two thousand international students from over one hundred countries attend Northeastern.

All international students participate in the University's Cooperative Plan of Education. Co-op, as it is commonly referred to, is a unique five-year program that combines outstanding academics with paid professional learning experience. Students in the College of Computer Science or the College of Engineering may elect to participate in a Four-Year Co-op Option. Students in the College of Arts and Sciences may petition to complete their degree in four years without co-op.

■ **Basic Requirements**

International students must submit the undergraduate application for admissions according to the following schedule:

Entrance date	Application deadline
Fall quarter (freshmen and transfer applicants)	May 1
Winter quarter (freshmen and transfer applicants)	September 1
Spring quarter (transfer applicants only)	December 1
Summer quarter (transfer applicants only)	March 1

Applicants from other countries are required to submit the same credentials as U.S. citizens (see pages 13–14). All credentials must be official documents or certified true copies. Credentials in languages other than English must be accompanied by certified English translations. Applicants with previous university-level studies are advised to submit course descriptions for all course work completed to facilitate the evaluation of transfer credit.

After notification of acceptance, students must submit the required tuition deposit and the university's Declaration and Certification of Finances Form by the date specified on the acceptance certificate before a Certificate of Eligibility (I-20 form or IAP-66 form) can be forwarded.

Northeastern University is authorized under federal law to enroll nonimmigrant aliens as full-time students in degree-granting programs.

Students seeking further information, including an application and a copy of the international student admissions prospectus, should contact the Department of Undergraduate Admissions.

■ **Advanced Standing Credit for Secondary School Graduates**

The university considers awarding advanced standing credit to students whose secondary school education clearly exceeds the requirements met by students in the American educational system. Inquiries about this should be directed to the Department of Undergraduate Admissions.

■ **Ambassador Awards for International Students**

The University offers five half-tuition scholarships to non-U.S. citizens for the freshman year (three academic quarters—September through June). These scholarships are awarded to individuals who are studying outside the United States and whose credentials provide evidence of exceptional academic achievement. The Ambassador Awards are given to freshmen enrolled in a full-time academic program; these awards are not renewable.

Admission of Transfer Students

Students wishing to transfer to Northeastern University may request advanced standing credit as upperclass students on the basis of acceptable credits earned in an accredited two- or four-year institution or a technical institute. In addition, Northeastern University participates in the Advanced Placement (AP) Program as administered by the College Entrance Examination Board. The University grants college credit for such courses in which a score of 3 or better has been attained. Students may also receive advanced standing credit for satisfactory performance through both the general and subject examinations of the College Level Examination Program (CLEP). In general, a score of 500 or better (general examinations) and a score of 50 or better (subject examinations) are required on any CLEP test to receive credit at Northeastern University.

■ **Basic Requirements**

- Candidates applying for transfer to Northeastern University must have achieved a satisfactory college record, appropriate to the course of study they wish to pursue, at another institution.
- Credit is generally granted toward a Northeastern degree for a grade of C or better in any reasonably equivalent course completed at another accredited institution.
- Candidates must be in good standing and must be eligible to continue in the institution they are currently attending.

■ **Application Procedure**

Transfer candidates must do the following:

- Complete an application for admission form and forward it with a nonrefundable fee of \$30 to the Department of Undergraduate Admissions. All transfer candidates are required to indicate their choice of college and major on the application.
- Submit an official transcript of their high school record.
- Request that an official transcript from each college attended be sent to the Department of Undergraduate Admissions directly from the Registrar's Office of the respective colleges. A listing of courses in progress for the current academic year (including course number, course title, and number of credits to be earned in each course) should also be forwarded.

Special Note—Transfer candidates are not required to complete entrance examinations.

Entrance date	Application deadline
Winter quarter	November 1
Spring quarter	February 1
Summer quarter	May 1
Fall quarter	July 1

The Test of English as a Foreign Language (TOEFL) is required for transfer candidates whose native language is not English. International students must obtain authorization from the Immigration and Naturalization Service to transfer from one school to another. Please refer to pages 21–22 for complete information for international students.

■ Orientation and Registration

All transfer students are required to participate in an orientation and registration program. This one- to five-day program, which is scheduled immediately before the beginning of classes, provides transfer students with the opportunity to meet with their faculty advisers and plan their course schedules. They also meet with members of the Office of Student Affairs and with representatives of the Department of Cooperative Education.

Students should bring a copy of their official Certificate of Acceptance to the orientation and registration program. In most cases, the certificate lists each course (and its credit value) for which the transfer student has received credit. The total number of credits being received is also listed on the certificate.

Students receive full transfer credit only for courses that are listed on the Certificate of Acceptance and for which a grade has been recorded on an official transcript from their former college(s).

Transfer credit from other institutions is not computed into the Northeastern University quality point average.

Northeastern University uses the quarter calendar and awards quarter hours of credit for courses that are successfully completed. Each quarter hour of credit is equivalent to three quarters (¾) of one semester hour. Most Northeastern courses are equivalent to three (3) semester hours of credit or four (4) quarter hours.

In general, students who successfully complete 48 quarter hours will usually qualify for sophomore standing, 80 for middler, 112 for junior, and 148 for senior. All upper-class course selection for transfer students is planned with their faculty advisers.

Additional information about transfer policies and procedures may be obtained from the Department of Undergraduate Admissions.

Deposits Required from Freshmen and Transfer Students

If the Committee on Admissions makes a favorable decision on a student's application, the student is asked to submit a nonrefundable tuition deposit of \$100 by May 1. This deposit indicates intent to enroll and is applied to the first quarter tuition account.

Students applying for entrance dates other than September should note the required deposit date on their certificates of acceptance.

Students interested in on-campus housing must submit a nonrefundable \$400 deposit along with a completed housing application form to complete the housing application process. Information about this required nonrefundable deposit is mailed to all students accepted by the Department of Residential Life following receipt of the tuition deposit. For further information and instructions, see the Housing section, pages 41–46.

General and Special Health Requirements

The Lane Health Center's Pre-entrance Physical Examination Form is sent to each student following acceptance at Northeastern. This form is considered a condition of admission. Each applicant must return the completed form, which includes a medical history, documentation of a recent physical exam, and a tuberculin test within six months of registration.

In addition, state law requires medical documentation of immunization against measles, mumps, rubella, tetanus, and diphtheria. A rubella titre is mandatory for the health professions (Medical Laboratory Science, Nursing, Pharmacy and Allied Health Professions, Radiology, and Physical Therapy). Tuberculin tests are required annually for nursing students and within three months prior to the practicum for student teachers. Junior-year physical therapy students will have a repeat physical exam performed at the Lane Health Center.

In accordance with section 504 of the Rehabilitation Act of 1973, applications for admission are judged on the basis of qualification and not on the absence or presence of a medical or disabling condition. Any necessary adjustments for such applicants are readily made to ensure access to college life, both academic and extracurricular.

Cooperative Education

An Education That Works



Cooperative education is based on the principle that what students learn in the workplace is just as valuable as what they learn in the classroom. By combining work and study, students gain greater insight into each.

At Northeastern University, cooperative education is given such a high priority that it is considered a degree requirement for most programs. The University assists students in planning and structuring cooperative work experiences. It also attempts, whenever possible, to integrate students' work experiences into their academic work. But the University cannot do it alone. A student's interest and enthusiasm play a crucial role in determining the quality of co-op experiences. The success of the program, then, depends upon the cooperation of educators, students, and outside agencies to produce an integrated and relevant program.

Studies have shown that the reinforcement of classroom learning with job responsibilities increases a student's motivation and self-confidence. Greater interest in academic work develops when students see the relationship between co-op work and the

principles they study in the classroom. Not only are co-op students able to evaluate career decisions early in their college years, but they also gain meaningful work experience before graduation and establish professional contacts and references.

Finally, the salaries students earn on co-op assignments help defray tuition, room and board, books, and other expenses.

Department of Cooperative Education

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Kathleen Sharkey-Jordan, M.Ed., *Assistant Dean*

Robert E. Vozzella, Ed.D., *Associate Professor and Director, International Cooperative Education*

Nancy A. Gaffney, M.P.A., *Assistant to the Dean*

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Gary M. Somers, M.A.

Russell A. Straub, B.S.

Lecturers

Barbara L. Elderkin, M.Ed.

Martha L. Wengert, M.Ed.

The Department of Cooperative Education administers the cooperative education programs for all undergraduate programs in the Basic Colleges and the graduate programs in engineering.

Participation in the Cooperative Plan of Education is required of all students in the Basic Colleges except those in the College of Arts and Sciences. Although most Arts and Sciences students choose to take advantage of co-op, the college offers a full-time program in which eight quarters of upperclass study may be completed in three years.

Cooperative education curricula leading to the baccalaureate degree generally require five years at Northeastern University. Programs typically consist of a freshman year of three consecutive quarters of full-time study followed by four upperclass years in which students alternate periods of classroom attendance with cooperative education experiences. However, the College of Engineering and the College of Computer Science offer a Four-Year Co-op Option. (See page 18.)

Students are assigned a faculty coordinator-counselor team that is responsible for all phases of the cooperative program and assists them in deriving greater value from their education at Northeastern. Personal interviews provide the basis for referral to specific opportunities that help students realize career objectives. The Department of Cooperative Education keeps abreast of activities in specific areas in order to provide

counseling on opportunities and trends. In general, co-op assignments become increasingly challenging and career-specific as the students' education and abilities grow.

Students may wish to participate in an activity other than paid employment during a cooperative period. They may wish to travel abroad, to do volunteer work, or to take specialized courses at another institution. Students may arrange time for these special activities with their coordinators.

Further details on the cooperative program are available in *Co-opportunities*, a booklet the Department of Undergraduate Admissions will be happy to send you on request.

International Cooperative Education

Robert E. Vozzella, Ed.D., *Director*

The Office of International Cooperative Education offers a wide variety of services to domestic as well as international students. Through the International Exchange Program, qualified undergraduates are afforded the opportunity to be placed abroad for their cooperative work experience. Placements are currently available in the United Kingdom, Ireland, France, Germany, Austria, The Netherlands, Sweden, Canada, Australia, and Israel for students whose academic, linguistic, and professional experience make them appropriate candidates for positions abroad.

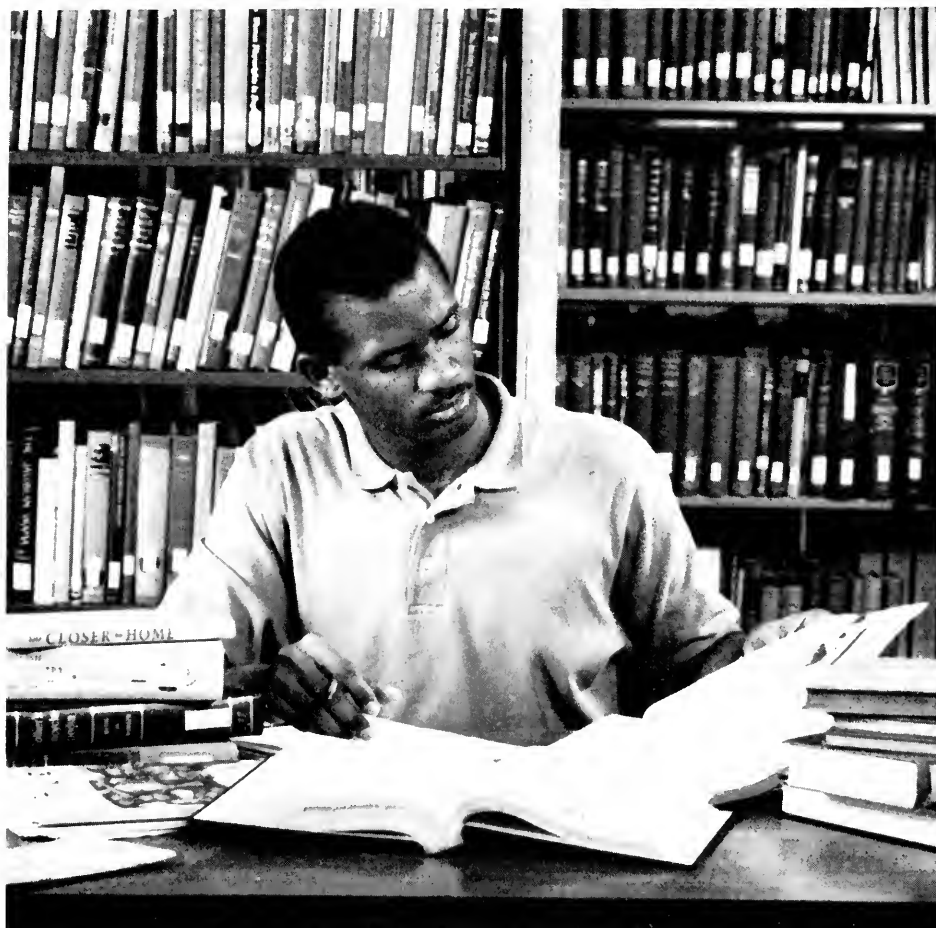
International students may receive assistance on matters relating to their co-op employment, such as Social Security and tax information, as well as issues involving the verification of their immigration and co-op status.

The course *Working in the United States*, which has been created expressly to meet the needs of undergraduate international students, is taught by the staff of the Office of International Cooperative Education. It is designed to assist such students in competing more effectively for domestic cooperative education positions and to facilitate their adjustment into the American work force.

New co-op programs currently are being developed in the home countries of international students where the economic and social conditions render such undertakings possible. Limited opportunities with various American multinational corporations (especially those having operations in areas of Pacific Asia such as Singapore, Hong Kong, and Indonesia) are available for international students majoring in engineering, computer science, and business administration.

College Expenses

Tuition and Fees



Students are advised that tuition rates, room-and-board charges, and fees are subject to revision by the Board of Trustees at any time. All registered Basic College students are considered full-time and are charged full tuition for course work of twelve quarter hours or more. In addition, charges will be made for course work beyond the normal academic schedule.

Students should note that the freshman year consists of three quarters of full-time study. The Cooperative Plan of Education, whereby students may be gainfully employed, does not begin until the sophomore year.

The primary purpose of cooperative education is to provide invaluable on-the-job training, but it also can help make education possible without the accumulation of a large personal debt. Because of the plan—and the University's determination to keep basic expenses as low as possible—many deserving students who might not otherwise be able to afford an education have attended Northeastern.

Annual Costs

The chart below indicates annual tuition costs for most freshmen and upperclass students. However, students in equipment-intensive courses or programs with special assignments should expect to pay slightly more (as in the Department of Health, Sport, and Leisure Studies or the Physical Therapy program). Tuition is paid in quarterly installments at the beginning of each quarter. Payments depend on both one's class and basic college. Tuition for freshmen is computed by the year and paid in three equal installments. Those enrolling in September pay at the beginning of the fall, winter, and spring quarters; January enrollees pay at the beginning of the winter, spring, and summer quarters. Upperclassmen pay by the academic quarter.

Room-and-board expenses for those living in University-sponsored residences vary with assigned dormitory. Costs are computed on the basis of a seven-day week and are, like tuition, paid in installments. (See pages 44–45 for detailed per quarter room and board costs.) A nonrefundable deposit of \$100 for tuition is payable no later than May 1. An additional nonrefundable deposit of \$400 will be required from those who request housing. These deposits are applied to the first-quarter costs. (See also pages 44–45.)

Tuition*

College	Freshmen (3 quarters) [†]	Upperclassmen (2 quarters) [‡]
College of Business Administration	\$9,420 (\$3,140)	\$8,900 (\$4,450)
College of Computer Science	\$9,420 (\$3,140)	\$8,900 (\$4,450)
College of Engineering	\$9,420 (\$3,140)	\$8,900 (\$4,450)
School of Engineering Technology	\$9,420 (\$3,140)	\$8,900 (\$4,450)
College of Arts and Sciences	\$8,640 (\$2,880)	\$8,020 (\$4,010)
School of Journalism	\$8,640 (\$2,880)	\$8,020 (\$4,010)
Boston-Bouvé College of Human Development Professions	\$8,640 (\$2,880)	\$8,020 (\$4,010)
Physical Therapy majors	\$9,060 (\$3,020)	\$8,380 (\$4,190)
College of Criminal Justice	\$8,640 (\$2,880)	\$8,020 (\$4,010)
College of Pharmacy and Allied Health Professions	\$8,640 (\$2,880)	\$8,020 (\$4,010)
Alternative Freshman-Year Program	\$8,640 (\$2,880)	not applicable

* All amounts are annual unless otherwise noted. Parentheses indicate either quarters or quarterly costs.

† Freshman tuition is payable in three installments at the beginning of each quarter: September 25, 1989; January 2, 1990; and April 2, 1990. For students who enroll in January, payment dates are January 2, 1990, April 2, 1990, and June 25, 1990.

‡ The following schedule applies for upperclass student tuition payment: Division A, September 25, 1989–April 2, 1990; Division B, January 2–June 25, 1990; Division C (beginning September 25, 1989, January 2, 1990, and April 2, 1990) is the term used to denote the classification of students who are temporarily or permanently on a noncooperative academic year. Certain students in the College of Arts and Sciences may select a noncooperative four-year program. In other colleges, this program is temporary, sometimes required of transfer students to phase into the Cooperative Plan.

Room and Board*

Room	Variable: from \$910 to \$1,215 per quarter
Meal Plan Options [†]	Variable: from \$765 to \$930 per quarter

* Freshmen will automatically be assigned to the 21-meal plan option, but for the first quarter only. For more details on meal plans and prices, see page 45.

† Estimates only; costs will vary with the year and program of study.

Required Fees for All Students

■ Application Fee

A fee of \$30 is required when the application for admission is filed. This fee is nonrefundable.

■ Accident and Sickness Insurance

The University provides an excellent hospital insurance and student health program. All students will pay a nonrefundable University Health Service fee of \$400 per year. This fee will cover the group Blue Cross/Blue Shield program and the medical services provided to students by the University Health Service.

■ Student Center Fee

All students in the Basic Colleges on the Boston campus are charged a fee of \$12.50 per quarter for the services available in the Carl S. Ell Student Center.

■ Student Activities Fee

A fee of \$10 per quarter is required of all students to fund student clubs, activities, and organizations.

■ Residence-Hall Activities Fee

All students living within the residence-hall system are charged a \$5 per quarter activity fee for planned program activities sponsored by the Residence Student Association and the hall governments.

■ Photo-Identification Operation

All full-time students, staff, and faculty are required to have an officially approved and properly validated photo-identification card. All students are required to show their I.D. card at the library, athletic events, student elections, Health Services, and the offices of the bursar or registrar.

An official I.D. card will be issued to new students at their orientation and registration periods. Replacements for lost cards can be obtained by going *first* to the Cashier's Office, 248 Richards Hall, and then, for the photo, to 251 Ell Student Center between the hours of 11:30 a.m. and 2:30 p.m., Monday through Friday. A charge of \$2 is levied for the initial I.D. card, \$5 for a replacement.

Other Fees

■ International Student Fee

A one-time fee of \$200 is charged to new undergraduate international students, billed and payable after their acceptance at Northeastern.

■ Liability Insurance

Freshmen in the Colleges of Nursing (bachelor's degree program and special program for R.N.s) and Pharmacy and Allied Health Professions (respiratory therapy only), as well as all upperclass students in Nursing, Pharmacy and Allied Health Professions (excluding health record administration), and most students in certain programs in the Boston-Bouvé College of Human Development Professions are required to carry liability insurance. A fee of \$18 is charged per year.

■ **Deferred Payment**

Deferred payment of tuition entails a fee of \$10, which is levied on all accounts not paid by the end of the second week of classes. To arrange for the deferred payment plan, students must contact the Office of the Bursar before the start of the second week of classes. The following is the only deferred payment plan available:

Portion of Bill per Quarter

First payment $\frac{1}{3}$
Second payment $\frac{1}{3}$
Third payment $\frac{1}{3}$

Payment Deadline

First week of quarter
Fourth week of quarter (approx.)
Eighth week of quarter (approx.)

■ **Late Payment Fee**

A fee of \$100 will be assessed for failure to arrange for, and make, payments in accordance with the prescribed regulations.

■ **Laboratory Deposits**

Students taking laboratory courses should be prepared to purchase laboratory deposit cards from the Office of the Cashier as directed by the department offering the course. These deposits will be drawn upon to cover any breakage and destruction of apparatus in the laboratory.

■ **College of Nursing Uniforms**

Students in the baccalaureate degree program of the College of Nursing purchase uniforms in the fall quarter of the sophomore year.

■ **College of Pharmacy and Allied Health Professions Uniforms**

- Students in respiratory therapy purchase uniforms in the spring quarter of the sophomore year.
- Students in dental hygiene purchase uniforms in the fall quarter of the freshman year.
- Students in radiologic technology purchase uniforms in the fall quarter of the freshman year.
- Students in the medical laboratory science programs purchase laboratory coats in the spring quarter of the freshman year. Co-op assignments to hospitals usually will require uniform purchases in the spring or summer quarter of the sophomore year.

■ **Reserve Officers' Training Corps Uniform Deposit**

Freshmen enrolling in ROTC make a deposit of \$35 to cover loss of, or damage to, ROTC uniforms and equipment. Any loss or damage exceeding the deposit will be charged to the student.

■ **General**

Students in the College of Nursing may expect to be assessed fees for clinical laboratory experiences and for the Nursing Resource Laboratory. In addition, candidates in the College of Nursing who want graduation pins are expected to pay approximately \$200 for each pin. Physical education majors pay a room-and-board charge for a resident program at the Warren Center in the spring quarter of the freshman year. Recreation and leisure studies students pay a fee in the freshman year for a one-week term of camping at the Warren Center.

■ **Overloads**

Tuition covers the cost of each student's required courses for a quarter. In addition, a course worth one quarter hour of credit may be taken without added charge. However, any other additional courses will be billed as overloads.

■ **Payment of Tuition**

All payments should be made by mail or at the Office of the Cashier, 248 Richards Hall. Checks should be made payable to Northeastern University. Beginning with the second week of any quarter, students are not eligible to attend classes unless their tuition has been paid or specific arrangements have been made with the Bursar for a plan of deferred payment.

It is the student's responsibility to ensure that all tuition and dormitory charges and fees are paid when due. If a bill has not been received prior to the start of classes each quarter, the student must come to the Office of the Bursar where a bill will be processed. If there is a billing problem, the undisputed portion of the bill should be paid on time to avoid any additional late fees. Failure to receive a bill through the mail or to pay the undisputed portion of the bill is not justification for late payment of amounts actually owed.

Refunds

The University provides all instruction on an academic-quarter basis, for which students pay at the beginning of each quarter. Tuition refunds in all schools and colleges may be granted through the first four weeks of a quarter only when specific conditions are met and on the basis of the date appearing on the official withdrawal application. (Nonattendance does not constitute official withdrawal.) Questions regarding refunds should be discussed with the Office of the Dean of Students. When approved, refunds are made as follows:

■ **Tuition Refund**

Official Withdrawal Date	Tuition Refund
1st week of quarter	100 percent
2nd week of quarter	75 percent
3rd week of quarter	50 percent
4th week of quarter	25 percent

■ **Room and Board**

Rental charges for rooms in University accommodations are refundable only in cases of withdrawal prior to the start of a quarter (except in special circumstances so adjudged by the University). The deposit is not refundable. Board charges may be refunded for all unused portions when the food identification card is surrendered to the University Dining Service.

Financial Aid



Charles M. Devlin, M.Ed., *Dean of Student Financial Services*

The Office of Financial Aid provides a full range of financial services to assist students in paying for their education. In addition to determining eligibility for traditional federal, state, and institutional financial aid programs, the office provides information and services on alternate sources of financial assistance.

The office maintains a full library of resource materials on scholarships, grants, fellowships, prizes, and awards offered by outside agencies and organizations. These reference books, catalogs, and pamphlets are available for review to all Northeastern students during the regular office hours of 8:30 a.m. to 4:30 p.m.

The Office of Financial Aid also provides a part-time job referral service for all Northeastern students. Part-time job opportunities are posted on bulletin boards out-

side 253 Richards Hall. Most part-time job opportunities are off campus. The part-time employment office also provides assistance in preparing résumés, tips on job interviews, and other information useful in obtaining part-time employment.

Financial aid funds that are awarded on the basis of family income and financial need are administered in accordance with nationally recognized and accepted principles. A fundamental premise of Northeastern's need-based financial aid program is that parents have an obligation to pay for the education of their children to the extent that they are financially able. In addition, students are expected to contribute to their educational cost from summer and co-op earnings, outside agency awards, their own assets, and other resources they may have. Financial aid is awarded only for meeting the difference between the total family contribution (from parent and student) and the annual educational costs.

Financial aid must be applied for annually, as outlined below. Criteria established by the College Scholarship Service and approved by the U.S. Department of Education are used in making an evaluation of eligibility. This evaluation includes an objective analysis of the family's financial circumstances, including income, household size, number of family members in college, assets, and indebtedness.

In order to receive financial assistance, a student must be a U.S. citizen or an eligible permanent resident of the United States.

■ Eligibility and Selection

All financial aid is contingent on the availability of funds. In order to be eligible to participate in the financial aid program at Northeastern University, all students must:

- Be in attendance at Northeastern University;
- Have documented financial need;
- Apply for financial aid, completing the proper application forms and submitting them in a timely fashion;
- Be enrolled in an eligible degree or certificate program on at least a half-time basis and be making normal academic progress as determined by the college in which the student is enrolled;
- Meet any other eligibility requirements of the individual aid programs.

Because of limited funding, Northeastern University is not always able to meet the full financial need of all applicants. Priorities in awarding aid will be based on highest financial need, meeting application deadlines, and the potential for academic achievement.

Most students who attend Northeastern University move along with their class. On request, information about retention and attrition can be obtained from the Office of the Dean of Students. For further information about financial aid, mail inquiries to:

Northeastern University
Office of Financial Aid
P.O. Box 75
Boston, MA 02117

■ **Application Procedure: Undergraduate Programs**

Initial Year (Freshmen and Transfer Students) Applicants seeking financial assistance are required to complete and mail a Financial Aid Form (FAF) to the College Scholarship Service by March 1 for summer or fall entrance and by November 1 for winter or spring entrance. Transfer applicants must also have completed financial aid transcripts from all previously attended postsecondary schools. Financial aid transcripts must be received by April 15 for summer or fall entrance and by October 15 for winter or spring entrance.

On the FAF applicants must indicate Northeastern University (code 3667), the Pell Grant Program, and their state scholarship program (if applicable) as recipients of the FAF. The FAF is available from secondary school guidance offices or the Office of Financial Aid.

Awards are made on a first-applied, first-aided basis and are contingent on continued funding. The typical award takes the form of a package combining a grant, a loan, and/or part-time employment. Awards may be adjusted at any time upon receipt of other funds or changes in status.

Upperclass (Sophomore–Senior) Upperclass applicants are required to submit a Financial Aid Form to the College Scholarship Service and a Northeastern University Upperclass Application for Financial Assistance each year for which they desire assistance. On the FAF applicants must indicate Northeastern University (code 3667), the Pell Grant Program, and their state scholarship program (if applicable) as recipients of the FAF. The FAF must be filed by March 1 for all upperclass aid applicants. The Upperclass Application is due by April 15. Financial aid awards are made for the entire academic year.

Telephone Numbers and Hours

General Information (Financial Aid)	254 Richards Hall 617-437-3190 8:30 a.m.–4:30 p.m.
Pell Grant Information	275 Richards Hall 617-437-3804 8:30 a.m.–4:30 p.m.
Student Loans	256 Richards Hall 617-437-3386 8:30 a.m.–4:30 p.m.
Initial-Year Information	253 Richards Hall 617-437-3907 8:30 a.m.–4:30 p.m.
Student Employment Center	253 Richards Hall 617-437-3200 8:30 a.m.–4:30 p.m.

Note: The hours above are for September through June. From July through August, information is available Monday through Thursday, from 8:00 a.m. through 5:30 p.m.

State Assistance Programs

The Office of Financial Aid requires applicants for aid to apply to state scholarship programs at the same time that they apply for aid from the University.

State Grants and Scholarships The Commonwealth of Massachusetts provides scholarship aid to Massachusetts students pursuing full-time programs of study in an accredited college or university. Application is made by completing the Massachusetts version of the Financial Aid Form by the published deadline. Awards are made in the summer of

each year, and applications for entering freshmen are available through their high school guidance offices. Out-of-state students should investigate aid programs in their respective states. The following states allow students to use their state grants at Northeastern: Connecticut, Delaware, District of Columbia, Maine, Maryland, New Hampshire, Pennsylvania, Rhode Island, and Vermont.

The Commonwealth of Massachusetts also provides assistance through the Gilbert Matching Grant Program and three pilot programs, which include one work and two grant programs. Application for these programs is based on a completed Financial Aid Form. Funds are awarded by the Office of Financial Aid on the basis of guidelines published by the state.

Massachusetts Family Education Loans The Massachusetts Education Loan Authority, in cooperation with Northeastern University, offers a program of Family Education Loans, under which parents can borrow to pay the cost of education and repay in low monthly installments spread over fifteen years. Neither students nor their parents need to be Massachusetts residents in order to qualify. A creditworthy spouse may also borrow under the program. To participate, a student must be enrolled at least half time. Families can borrow from \$2,000 up to one hundred percent of the yearly cost of attendance. Applications may be requested from the Office of Financial Aid.

Federal Programs

All federal financial aid programs are subject to change, depending upon adequate and continuing federal support.

Pell Grant This is a program of direct federal grants to undergraduate students only. Eligible students can receive as much as \$2,300 per year toward the cost of their education. Pell Grants are generally available to all students who have not previously received a bachelor's degree, who are citizens or eligible permanent residents, and who are attending college on at least a half-time basis (minimum six quarter hours). Students must be enrolled in an eligible program for the purpose of obtaining a degree or certificate. To utilize this program to the fullest, all students applying for financial aid *must* file for a Pell Grant.

Applications for a Pell Grant can be made on the Financial Aid Form (FAF), which is available from local high schools, or by telephoning the Pell Grant unit of the Office of Financial Aid at 617-437-3190.

College Work-Study Program This is a need-based program of part-time employment under the sponsorship of the federal government. It is designed to help full-time students meet their educational expenses. Students generally work part-time while attending classes. Eligible students may work for the University or for public or private nonprofit off-campus agencies. The Office of Financial Aid has the responsibility of placing qualified students in their job assignments.

Supplemental Educational Opportunity Grant Supplemental Educational Opportunity Grants are direct awards provided by the federal government. They are available to a limited number of full-time undergraduate students who present evidence of significant financial need, typically evidenced by Pell Grant eligibility. Eligible students who are accepted for entrance may receive Supplemental Educational Opportunity Grants ranging from \$100 to \$4,000 per year during their undergraduate studies.

Health Professions Loan This program is available to full-time undergraduate students who have been accepted for a course of study leading to a bachelor of science degree in pharmacy. A student who evidences financial need and academic promise may bor-

row as much as \$2,500 per academic year. Repayment of principal and interest does not begin until one year after the student ceases to pursue a full-time course of study. Repayment of principal may be extended over a ten-year period, with interest at the rate of five percent per annum.

Stafford Loan Program Under this program (formerly the Guaranteed Student Loan Program), students who are enrolled for at least one-half the normal academic work load may borrow up to \$2,625 per academic year for the first two years of their degree or certificate program and up to \$4,000 per year for the next three years from a participating bank or other financial institution. The federal government pays the interest while the student is in school. Repayment must begin six months after enrollment drops below half-time.

Applications for the loan are available from local lending institutions, and the Office of Financial Aid can provide additional information. Note that all students must have a Financial Aid Form on file and that upperclass students must also file a Northeastern Upperclass Application for Financial Assistance before submitting their loan applications.

Parent Loans for Undergraduate Students Under the Parent Loan Program (PLUS), parents of dependent undergraduate and parents of dependent graduate students may borrow up to \$4,000 per year for each child enrolled in an approved educational institution. These loans are offered by banks and other financial institutions. Terms and availability vary from state to state. Unlike the Stafford Loan Program, the PLUS loan requires repayment of the loan to begin within sixty days of receipt. Repayment may be stretched out over ten years if the minimum monthly payment of \$50 is maintained. Applications and more information can be obtained from local lending institutions.

Perkins Student Loan (formerly National Direct Student Loan) Perkins Loans are available to students who present evidence of needing financial assistance. Undergraduate students may borrow up to a maximum of \$4,500 for the first two years, or a total of \$9,000 for their entire undergraduate education. Students are allowed a total maximum of \$18,000 through their undergraduate and graduate educations. Repayment of principal and interest on Perkins Loans is not required until six or nine months after a student graduates, withdraws, or drops below half-time enrollment. Repayment of principal may be extended over a ten-year period, with the interest rate at five percent per annum. Repayment may be deferred up to three years if the student is pursuing at least a half-time course of study or serving in the Peace Corps, VISTA, or the armed forces.

Nursing Student Loan This program is designed for full-time undergraduate students who have been accepted for a course of study leading to a bachelor of science degree in nursing. Provided financial need is evident, students may borrow as much as \$2,500 each year up to a maximum amount of \$13,000 for their entire undergraduate education. Repayment and interest on these loans do not begin until nine months after the student ceases to pursue a full-time course of study. The repayment of the principal may be extended over a ten-year period, with the interest at the rate of five percent per annum.

Supplemental Loans for Students Under the SLS program, independent undergraduate and all graduate students, whether dependent or independent, may borrow up to \$4,000 per year. These loans are offered by various banks and other financial institutions. They are unlike Stafford Loans in that the federal government does not pay the interest while the student is in school; that interest is added to the principal balance. The student must begin repayment after dropping below half-time enrollment. Applications and more information are available from participating local lending institutions. Students must apply for Stafford Loans before applying for the SLS program.

University Scholarships

The University awards numerous scholarships through the Office of Financial Aid. Because each scholarship is awarded specifically to students who qualify, students should not apply for any specific scholarship. However, students who feel they may be a potential recipient for certain awards may bring that fact to the attention of the Office of Financial Aid by noting their interest in particular scholarships on the Upper-class Application. For a complete list of University scholarships, see pages 256–274 of the Appendix.

Other Scholarships

Several scholarships awarded to Northeastern students are funded by outside sources. Recommendation for the specific award is made by one of the several college scholarship committees or the departments concerned, in conjunction with the Office of Financial Aid. Students who feel they may be a potential recipient for any of these awards should notify their financial aid counselor in writing. For a complete list of scholarships funded by outside sources, see the Appendix, pages 275–277.

Housing

Department of Residential Life



■ Residence Halls

The “college experience” is difficult to define, but we all know that it involves more than academics. For that reason, the Residential Life Program at Northeastern University strives to provide students with more than a place to sleep, store belongings, and study. Resident students are able to take advantage of a variety of educational opportunities in an environment that offers support and a sense of community. A variety of residence hall programs is offered. There are freshman, coed, and single-sex halls; upperclass men’s and women’s apartments; three academic theme halls (Honors, Engineering, and Computer Science Program); an international hall; and designated quiet locations. Each residence hall is under the direction of a full-time professional residence director, assisted by a team of undergraduate resident assistants who provide educational and social programs and assist residents in their academic and personal development. Students living in a residence hall are members of their respective resi-

dence hall council, which represents student opinions and assists in the organization of programs and activities.

Most residence halls have lounge and study areas, as well as laundry and recreation rooms. Student rooms are equipped for comfortable residence hall living. The University supplies a bed, dresser, desk, and chair for each student. Students provide their own draperies, bedspreads, bed linen, pillows, towels, lamps, rugs, bookcases, and wastebaskets.

The Department of Residential Life is located in 104 Ell Building. It is comprised of the three areas below. For further information, telephone the appropriate number below.

Telephone Numbers and Hours

Assignments and Billing	104 Ell Center 617-437-2814 8:30 a.m.–4:30 p.m.
Student Life	4 Speare Hall 617-437-2004 8:30 a.m.–4:30 p.m.
Facilities and Operations	17 Cushing Hall 617-437-5872 8:30 a.m.–4:30 p.m.

Note: The hours above are for September through June. From July through August, information is available Monday through Thursday, from 8:00 a.m. through 5:30 p.m.

■ **Selection**

The choice of housing is an important consideration for the freshman year, and students are encouraged to visit Northeastern before making a decision. In general, the University recommends that students not living at home reside in University housing, but the decision is up to the student. Arrangements for off-campus housing are the responsibility of students and their families. Students who live within commuting distance of the campus should be sure about their housing plans for the year before signing the residence license agreement.

Most rooms are designed to accommodate two students; however, three- and four-person rooms are available in some facilities. Some residence halls offer suites for two to seven students. All suites have one to three bedrooms and a bathroom; some have a common area.

The University maintains some apartment units for upperclass men and women. These apartments accommodate up to four students. Assignments are made on the basis of the date of receipt of the housing deposit and application. Each unit is fully furnished, and the rental charge includes utilities.

■ **Housing Applications and License Agreement**

Housing applications and residence license agreements are administered by the Department of Residential Life, 104 Ell Building. Housing is subject to available space. Students who have been accepted by the University and have requested housing on their applications for admission will receive a housing application and deposit card after payment of the \$100 tuition deposit.

Students accepted to the Alternative Freshman-Year Program who live within the Route I-495 beltline of Northeastern's Boston campus are not eligible for campus housing for the fall quarter. Students who are interested in living on campus during the winter and spring quarters must complete the housing application process by October 15. Anyone having questions concerning this policy should contact the Department of Undergraduate Admissions.

To complete the housing application process, freshmen and transfer students must return the housing application to the Department of Residential Life and the deposit card with a \$400 room deposit to the Cashier Office. The nonrefundable and nontransferable housing deposits are credited toward the first quarter residence charges.

The residence license agreement for freshmen is for three full quarters of the year. The license agreement for freshmen with partial credit is also for three full quarters. The license agreement for transfer students is for one quarter at a time.

Returning upperclass students must apply for housing each quarter. The upperclass housing deposit is \$250. All students are assigned on a first-come, first-served basis.

■ Costs for Room per Quarter*

Traditional Residence Halls

Kerr Hall	\$1,035
Light Hall	\$1,035
Melvin Hall	\$1,035
Smith Hall	\$1,035
Speare Hall	\$1,035
Stetson Hall East	\$1,035
Stetson Hall West	\$1,035
White Hall	\$1,035
400 The Fenway (on Emmanuel College campus)	\$910
Northeastern University at the "Y" (316 Huntington Avenue)	\$910

Suites

115 Hemenway	\$1,035
119 Hemenway	\$1,035
153 Hemenway	\$1,035
157 Hemenway	\$1,035
163 Hemenway	\$1,035

Apartments

Burstein Hall (458 Huntington Avenue)	\$1,130
Fairwood (319 Huntington Avenue) (337 Huntington Avenue)	\$1,035 \$1,130
407 Huntington Avenue	\$1,130
Rubenstein Hall (464 Huntington Avenue)	\$1,130
106–122 St. Stephen Street	\$1,130
West Apartments (50 Leon Street)	\$1,215

Special Note With the exception of Northeastern University at the "Y," all single rooms are charged at an additional rate of \$150 per quarter. An infirmary fee of \$25 per quarter and a residence-hall activities fee of \$5 per quarter are charged to resident students.

* The above quarterly rates are for the 1989–90 academic year only. Costs and types of residence halls (coed, male, female) are subject to revision by the President and Board of Trustees at any time. The resident composition of any building may be adjusted at any time based on changes in the demographics of the student population.

■ **University Dining Service**

All students who live in University residence halls are required to participate in the food plan run by the University Dining Service. Three different meal plans are available. During the first quarter, all entering freshmen must participate in the twenty-one meal option. They have the option to select another plan at the start of the second quarter of the academic year.

Meals per Week	Cost per Quarter*
21	\$930
15	\$840
10	\$765

* The above quarterly rates are for the 1989-90 academic year only. Dining plan costs are subject to change at any time.

Students living in University apartments are not required to be on the food plan; however, they may choose one of the meal plans if they wish. When conditions warrant, such as during weekends and slow periods, the University may close or consolidate certain dining facilities.

■ **Residence Hall Proctors**

Residence hall proctors are stationed at the entrance of most residence halls. Proctors make reasonable efforts to ensure that only residents and their guests are admitted to the building.

■ **Off-Campus Housing**

The Department of Residential Life can assist students in their search for affordable off-campus housing in the Boston area through its Off-Campus Housing Referral Service. The service provides listings of realtors, temporary housing, and roommate services. By appointment, housing staff members are available to discuss the experience of living in the Boston area. The department strongly advises new students to visit Northeastern University before the start of the school year to acquaint themselves with life in Boston.

■ **Married Student Housing**

At this time, the University does not provide married student housing. However, the University has established an off-campus housing referral service to assist in the search for available housing in the Boston area. Listings are available in the Department of Residential Life. Although the department has agreed to make this listing available, Northeastern does not inspect or endorse the advertised property or space.

■ **Fraternity Housing**

Certain fraternities provide opportunities for room and board for men at reasonable rates. Information regarding these housing facilities may be obtained from the Off-Campus Housing Referral Service, 104 Ell Building.

■ **Cars**

Freshmen living in residence halls are not allowed to have cars or other powered vehicles on campus.

Upperclass students are strongly discouraged from bringing cars with them, as the University does not permit overnight parking and there is a severe shortage of public parking spaces near the University.

■ **Intersession**

Residence halls are officially closed during extended University intersession periods between quarters. During these periods, students are expected to vacate their rooms.

■ **Tours**

Arrangements for tours of the Northeastern campus, including residence halls, may be made by telephoning the Department of Undergraduate Admissions at 617-437-2211.

■ **Policies**

For policies, rules, and regulations regarding residence hall living, please refer to the *Student Handbook* and *A Guide to Residence Hall Living*. While the Department of Residential Life tries to provide a pleasant and safe hall, students are reminded that each individual who lives, works, or studies in an urban environment has a responsibility to observe courtesy to neighbors, basic personal safety, and security practices.

Academic Policies

Academic Policies at Northeastern

■ Quarter-Hour Credits

Northeastern University operates on a quarter-system calendar. All courses are evaluated in terms of quarter-hour credit. A quarter-hour credit is equal to three-fourths of a semester-hour credit. Classes at Northeastern are scheduled in different modules.

In assessing quarter-hour weights for courses, the following statement applies:

One quarter hour of credit is three hours of student learning time per week, usually one hour of lecture or discussion plus two hours of individual study time, over a quarter.

■ Changes of Program

The University reserves the right to withdraw, modify, augment, or change the order or content of courses in any curriculum. It further reserves the right to change tuition, fees charged, and other regulations.

Any changes that may be made from time to time pursuant to the above policy shall be applicable to all students in the school, college, or department concerned, including former students who may re-enroll.

■ Textbooks and Supplies

The Bookstore, located on the ground floor of the Ell Student Center, is operated for the convenience of the student body. All books and supplies required for course work at the University may be purchased at The Bookstore.

■ The Academic Year

Northeastern University operates on a quarter-system calendar.

■ Grades and Examinations

Examinations covering the work of the quarter usually are held at the close of each quarter. Exceptions may be made in certain courses where, in the opinion of the instructor and with the approval of the dean of the college concerned, final examinations are not necessary.

■ Pass/Fail System

Students may register for a limited number of courses on a pass/fail basis. Each college has its own rules governing this system. Common to all colleges, however, is the grading system. Pass/fail grades are not included in the calculation of the quality-point average. Only pass grades earn credits toward degree requirements. (Pass/fail guidelines are also stated in the *Student Handbook*.)

■ Grades

A student's grade is officially recorded by letter. Introduced in September 1980, the following grades, listed below with their numerical equivalents, remain in effect:

A	4.000	C	2.000
A -	3.667	C -	1.667
B +	3.333	D +	1.333
B	3.000	D	1.000
B -	2.667	D -	.667
C +	2.333	F	0

Freshmen who are taking a full academic program and who have a weighted average for the year below 1.4 will not be permitted to register for advanced work. Upperclass students should consult the *Student Handbook* to ascertain the level of continuing achievement required of them by the faculty of their college.

An I or X (incomplete) grade indicates that the student has not completed the course requirements.

An official University grade report is mailed to each student at the end of each quarter.

■ Transcripts

Applications for transcripts of record are made at the Office of the Registrar, 117 Hayden Hall. A fee of \$2 is charged for each transcript request.

■ Middler-Year Writing Requirement

All Basic Day College students must successfully complete the Middler-Year Writing Requirement, effective the fall quarter of 1984 for all freshmen and the fall quarter of 1985 for all upperclass transfer students.

- The Middler-Year Writing Requirement must be fulfilled for graduation with a bachelor's degree. A prerequisite for the Middler-Year Writing Requirement is the successful completion of Freshman English (or equivalent).
- The Middler-Year Writing Requirement may *not* be fulfilled until the student has successfully completed at least eighty quarter-hours of academic work (including transfer credit), and the requirement *must* be fulfilled at Northeastern.
- As determined by each college, the Middler-Year Writing Requirement may be fulfilled either by passing one designated, upper-division writing course (four-quarter-hour course) with a grade of C (2.0) or better or by passing Writing Workshop (ENG 1340; one credit, pass/fail). Upperclass students should consult their college adviser or the Middler-Year Writing Requirement Office in the Department of English to see which option applies to them.

The *Undergraduate School Course Description and Curriculum Guide* and the *Student Handbook* specify the details of the writing requirement for both entering freshmen and transfer students.

■ Dean's List

At the end of each quarter an Honors or Dean's List is issued containing the names of students who have a 3.250 quality-point average or higher, with no I (incomplete) grade or grade below C – . A student who is on any form of probation, enrolled in a course on a pass/fail basis (except where there is no alternative or where required by the program), or not carrying a full load as determined by his or her Basic College will not be eligible. With few exceptions, as approved by the respective colleges, a full load is normally considered to be four courses or sixteen quarter-hours.

■ Reports on Scholastic Standing

Reports for all students are issued at the end of each grading period. Questions about grades are to be discussed with the student's faculty adviser. Parents and students are always welcomed by both college officers and faculty advisers for a conference on other relevant academic matters.

■ **General Conduct**

It is assumed that students come to the University for a serious purpose. The University community expects each student to respect the rights and privileges of others and to adhere to acceptable standards of personal conduct. Students should exercise their freedom with maturity and responsibility. They are expected to obey University regulations and to follow the instructions of and pay due respect to University officials. Conduct inconsistent with the general order of the University may result in disciplinary action. Damage to any building or to any of the furniture, apparatus, or other property of the University will be charged to students involved.

Any form of academic dishonesty is regarded as a most serious offense and renders the offender liable to disciplinary action. Aiding and abetting a student in any dishonesty is also held to be a grave breach of discipline.

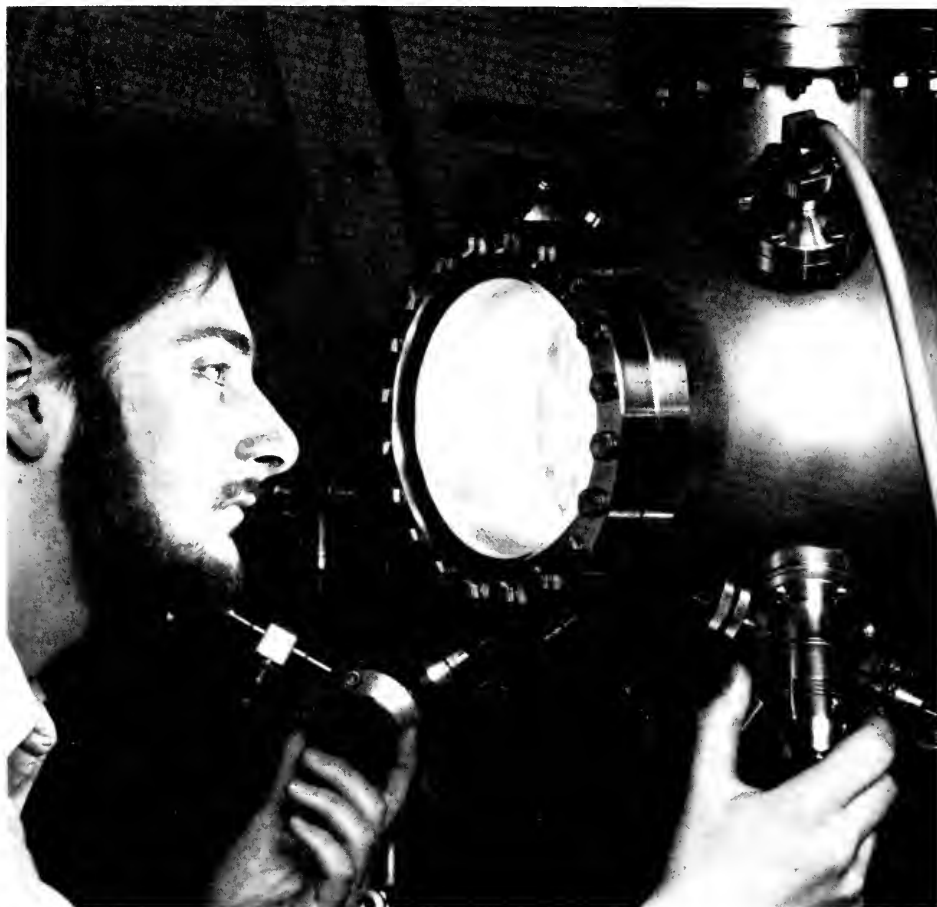
The University administers discipline with a high standard of integrity and a scrupulous regard for truth.

■ **Attendance**

Students are expected to attend all meetings of their classes. Absence from regularly scheduled classes may seriously affect the standing of the student and result in the University's dropping the subject or subjects from his or her schedule. Laboratory work can be made up only during hours of regularly scheduled instruction.

Academic Programs

College of Arts and Sciences



David C. Wharton, Ph.D., *Acting Dean*

Ronald J. McAllister, Ph.D., *Associate Dean, Academic Affairs*

Kay D. Onan, Ph.D., *Associate Dean, Faculty Affairs*

Mary Mello, M.A., *Director, Academic Administrative Services*

Charles J. Haberle, M.S., *Coordinator, Undergraduate Student Services*

Gail F. Leclerc, M.Ed., *Counselor to Undergraduates*

Joan F. Drexelius, Ph.D., *Assistant to the Dean*

Joseph O. Monahan, M.A., *Coordinator, International Study Programs*

■ Program Aims

Studies in a broad distribution of disciplines in arts and sciences are universally regarded as the core of higher education. For this reason, nearly all students in the University—no matter what disciplines they choose for their career training—devote a substantial portion of their studies to the arts and sciences.

The College of Arts and Sciences comprises a wide variety of programs spanning an enormous range of human knowledge and activity. These programs are grouped informally into areas as follows: Performing and Visual Arts, Humanities, Sciences and Mathematics, and Social Sciences. The college as a whole emphasizes the general education of students; within each area, the disciplines tend to offer a common preprofessional orientation and emphasis.

The college offers a large number of interdisciplinary programs as well as extradisciplinary opportunities for the enrichment of learning. These include exchange programs with other institutions, both nationally and abroad, for employment and/or study; programs for extended studies in field settings at sea and abroad; and cultural programs involving affiliations with professional performing arts organizations—to name a few. These programs are described at the end of the Arts and Sciences section of this bulletin.

Graduates of the college find they are prepared for employment opportunities in many walks of life. Many choose to accept employment directly after receipt of the bachelor's degree. Others continue their training by going on to graduate-level studies, for example, in business, law, or medicine. Some decide to pursue advanced study in an area closely related to their undergraduate field.

Four- and Five-Year Programs In all programs, students of the college have the option of choosing a four-year, full-time track or the five-year Cooperative Plan of Education. The Five-Year Plan offers opportunities for regular “real world” employment and income, often in an area related to the chosen area of academic work. Students are normally eligible to participate in the plan when they achieve sophomore status.

■ Major Programs

Freshmen may declare a major in one of the programs in the college prior to their matriculation. There is considerable flexibility, however, and students often change their major during the first two years. Students may also enter as freshmen with no specified major (liberal arts major preference, referred to as LAMP), but they must declare a major by the end of the freshman year.

Students in the college may earn either a bachelor of arts degree or a bachelor of science degree. Students majoring in human services or music, however, may earn a bachelor of arts degree only. Students majoring in art and architecture with a concentration in architecture or in visual and media design, in applied physics, or in political science with a concentration in public administration may earn only a bachelor of science degree.

■ Honors Program

The College of Arts and Sciences participates in the University-wide Honors Program. For further information, refer to the University Honors Program in the Undergraduate Admissions section on pages 16–17.

■ Graduation Requirements

Quantitative Candidates for either the bachelor of arts or bachelor of science degree must successfully complete a minimum of 176 quarter hours of credit, of which at least 144 quarter hours must be Arts and Sciences courses taken either at Northeastern or at other institutions. In addition, only four quarter hours of physical education credits and no ROTC credits may be used to meet degree requirements.

Residency Candidates must complete either seventy-five percent of the degree credit at Northeastern or the last three full quarters (a minimum of twelve full courses) at Northeastern.

Qualitative Candidates must achieve a minimum cumulative average of 2.0 (grade of C).

Transfer Credit Transfer credit from other colleges or universities is granted initially only for Arts and Sciences courses comparable to courses given at Northeastern. In the first quarter in residence, students may petition for additional transfer credit in such areas as business, engineering, nursing. Up to thirty-two credits of such non-Arts and Sciences courses may be granted. No transfer credit will be granted for courses in which the student received lower than a C (2.0) grade. For further information, see Admission of Transfer Students, page 22.

Freshman English All degree candidates must complete two quarters of Freshman English. Normally, this will be done by completing Freshman English I and II (ENG 1110 and ENG 1111) at Northeastern. Students who need extra assistance in writing skills, however, may be required to take three quarters of Freshman English.

Middler-Year Writing Requirement All students who entered during or after the fall of 1984 must fulfill an upper-division writing proficiency requirement. This is normally done at the point at which the student has successfully completed eighty quarter hours (the middler year for co-op students or the junior year for non-co-op students). There are several options available to students fulfilling this requirement. Students should check with the Middler Year Writing Office or the Office of the Dean of Arts and Sciences for details on options available to Arts and Sciences students.

Mathematics Requirement All freshman students will take a mathematics placement test prior to the start of classes. Students must complete basic course work in college-level mathematics and prove proficiency in mathematics. This is normally done during the freshman year. Refer to the College of Arts and Sciences *Core Curriculum Guide* for details.

Major Candidates must complete successfully the courses specified as major requirements. A complete listing of these required courses is published in the *Basic Day Colleges Course Descriptions and Curriculum Guide*.

Core Curriculum All Arts and Sciences students must complete the college core curriculum for graduation. The core curriculum requires that courses be taken in the following areas: basic skills, both communicative and quantitative; methods of inquiry; Western cultural heritage; alternative cultures and societies; theoretical perspectives and changes; and current issues in perspective. Details on the core curriculum are provided to students upon entry and are also available from the College of Arts and Sciences. The *Student Guidebook and Core Curriculum Guide*, available in the Office of the Dean of Arts and Sciences, describes these requirements.

Foreign Language All candidates for the bachelor of arts degree must attain a level of proficiency in a modern foreign language indicated by a passing grade in intermediate-level II of a college course or by meeting a comparable criterion that has been approved by the Department of Modern Languages.

A *conditional exemption* from this requirement may be granted in the following situations:

- Students who earned an average grade of C or better in a full, four-year language sequence in secondary school;
- Students who earned an average grade of A in a three-year language sequence in secondary school.

A conditional exemption *must* be confirmed by taking a proficiency examination during the first quarter at the University. A sufficiently high score will verify the exemption; otherwise, the student will be advised of the appropriate language course to take in the following quarter.

An *absolute exemption* will be granted to students:

- For whom English is a foreign language;
- Who receive a score of 550 or better in the Language Achievement Examinations.

For students who have not met the foreign language requirement at the time of entrance, the entry level into foreign language study depends upon the scope and level of prior study. The normal sequence for students with no prior preparation is two quarters of elementary-level language and two quarters of intermediate-level language. The Department of Modern Languages will determine an appropriate entry point at which students who have partial language preparation may begin completing the requirement. Students who plan to use Russian or Italian to fulfill the foreign language requirement should begin study as early as possible. The college is not able to offer these courses on a regular basis.

■ **Graduation with Honors**

Graduation with honors (*cum laude*) is reserved for those students who have completed a minimum of six quarters (72 quarter hours) as full-time students and who have achieved the following:

Quality-Point Averages

Graduation with honors	3.00–3.49
Graduation with high honors	3.50–3.74
Graduation with highest honors	3.75–4.00

Upon special vote of the faculty, a limited number of this group may be graduated with high honors (*magna cum laude*) or highest honors (*summa cum laude*).

■ **Advising and Placement**

Upon acceptance to the college, students are assigned to a faculty adviser in their major or to a specially designated faculty adviser if they have a general liberal arts major preference (LAMP). With this adviser, students choose courses that suit their interests and abilities and the requirements of their major. When necessary, students may undertake studies in skill development to improve their chances of success in college. Continual monitoring and mentoring by faculty advisers is provided throughout the undergraduate years.

The Arts and Sciences Dean's Office, located in 400 Meserve Hall, is the central administrative office for all students majoring in Arts and Sciences programs. In addition to the faculty advisers located in the various departments, Dean's Office counselors are available for academic assistance. The Dean's Office staff works closely with faculty advisers to help students work out study programs and to handle administrative problems. The Dean's Office is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, during the fall, winter, and spring quarters, and from 8:00 a.m. to 5:30 p.m., Monday through Thursday, during the summer. For further information, telephone 617-437-3980.

■ **Student Services**

The Writing Center The Writing Center offers to all students free assistance on class assignments or other writing tasks. The Writing Center staff—trained tutors who work one-on-one—includes specialists in academic essay writing, technical writing, business writing, research and documentation, editing, grammar, English as a second language, and literary analysis. Students may either drop in at 102 Cahners Hall, 110 The

Fenway, or telephone ahead for an appointment. Most tutoring sessions last half an hour. Writing Center hours are Monday through Thursday, from 10:00 a.m. to 4:00 p.m. Some evening hours are also available. Students should bring their writings with them. For further information, telephone 617-437-3086.

The Math Center The Math Center provides free one-on-one assistance for students enrolled in algebra review courses and in introductory and advanced mathematics courses. Instructional assistants offer help in clarifying concepts, explaining methods, checking homework, and studying for tests. The center is open Monday through Friday, 9:00 a.m. to 4:00 p.m., for students in algebra review courses and introductory math courses (through Calculus III). Students may sign up for appointments at 102 Cahners Hall. Advanced-course students may drop in on Tuesdays and Thursdays, from 9:00 a.m. to 4:00 p.m., for help on a first-come, first-served basis.

■ Program Descriptions and Regulations

The following pages briefly describe each major in the College of Arts and Sciences. Within each area of the college, the majors are listed in alphabetical order. Summaries of the areas can be found on the following pages: Performing and Visual Arts, page 56; Humanities, page 61; Sciences and Mathematics, page 69; Social Sciences, page 80.

A summary of the special programs in the college can be found on page 96. A brief description of each program, listed in alphabetical order, follows this summary.

A complete listing of individual courses offered by the college, including a short description of contents for each course, is given in the *Basic Day Colleges Course Descriptions and Curriculum Guide*, obtainable from the Office of the Registrar.

Performing and Visual Arts

In general, the arts are considered fields of study that combine knowledge and skill. Within the arts, a distinction often is drawn between “performing arts,” which traditionally include music, dramatic art, and dance, and “fine arts,” which include painting, drawing, sculpture, and architecture. At Northeastern University these are subsumed within what we refer to as performing and visual arts.

Traditional categorization does not do justice to developments in the academic study of the arts. All branches of the arts are being affected by changes in technology. Today the arts must be seen in a larger context that includes not only fine arts and performing arts but also computer graphics, environmental design, and various other forms of visual communication.

Education in the arts provides opportunities to study various aspects of the fine, performing, and visual arts fields.

See the Performing and Visual Arts area (pages 103–104), which incorporates arts programs and services, a community arts department, and several artists-in-residence groups.

In the College of Arts and Sciences, the major disciplines comprising the performing and visual arts are as follows:

- Art and Architecture, pages 57–58
- Music, pages 58–59
- Theatre and Dance, pages 60–61

Department of Art and Architecture

Peter Serenyi, Ph.D., *Professor and Chairman*

<i>Professor</i> Mardges Bacon, Ph.D.	Terrence G. Heinlein, M.Arch.	Frank P. Janusz, M.Arch.
<i>Associate Professors</i> Samuel S. Bishop, M.F.A. T. Neal Rantoul, M.F.A.	Renee LeWinter, M.A. Dianne W. Pitman, Ph.D.	Harel Kedem, M.A.A.S. Erik F. Kirton, M.Arch. John Moore, M.F.A.
<i>Assistant Professors</i> Mira Cantor, M.F.A. Mary Ann Frye, M.F.A.	<i>Lecturers</i> Judith Brassard Brown, M.F.A. Richard M. Brown, M.F.A., M.Arch. Leslie Humm Cormier, Ph.D.	Karen Norwood, M.F.A. Pamela A. Patton, M.A. Thomas J. Petit, M.F.A. Wenzel Pitelka, M.F.A.

Degrees Offered: Bachelor of Arts, Bachelor of Science

The visual arts, our oldest form of artistic expression, offer an understanding of humanity and the cultural forces that have affected us historically. Moreover, as visual communication becomes more widespread in the contemporary world, the use and understanding of visual language must be seen as a necessary part of the educational process. In view of the importance of the visual arts, the aim of the department is threefold:

- To introduce art and architecture both as history and as creative activity in the context of a broad liberal arts education;
- To offer a focused study of the visual arts through critical examination of both the language and content of art and architecture in the context of a particular historical period, or through the hands-on experience of a studio setting;
- To provide an opportunity for a solid academic foundation to those who wish to pursue a career in art and architecture or related fields.

A main resource of the department is Boston itself, whose architecture spans three hundred years, whose museums are world famous, whose galleries and cinemas offer the latest in their respective areas, and whose public library is one of the best of its kind. Teaching students to use these resources systematically is an all-embracing aim of the department.

■ Professional Preparation

The department offers preprofessional preparation for students interested in pursuing a career in architecture, graphic design, photography, and the teaching of the history and practice of art.

■ The Major

The department offers a major in art and two concentrations within the major: architecture and visual and media design.

Departmental requirements for the major in art are the two-part survey course in art history, the two-part visual foundations course, a drawing course, and twelve electives in art and/or architecture. The college also requires a core curriculum for both bachelor of arts and bachelor of science students. See page 54.

The departmental requirements for the two concentrations are:

Architecture This concentration leads to a bachelor of science degree, which is not a professional degree in architecture: same requirements as for the art major, except for the twelve art electives, which are replaced by four architectural history courses; six architectural design courses; two art or architecture studio electives; four technical courses; two computer-aided design courses; and five math/science courses. To fulfill all requirements for the architecture concentration, students must begin to take the required courses in the freshman year.

Visual and Media Design This concentration has the same requirements as the art major, except for the twelve art electives, which are replaced by sixteen studio courses, two history of art courses, one speech communication course, and two business courses. To fulfill all requirements for the visual and media design concentration, students must begin to take required courses in the freshman year.

With prior approval, art courses not offered by the department may be taken in one of the neighboring art schools or universities.

Students may pursue either a four-year full-time program or a five-year cooperative plan of study. Transfer from one to the other is possible, and registration in either can be reversed. Cooperative education work assignments include positions in museums, libraries, historical collections, archives, architectural firms, design firms, and the Northeastern University Art Gallery.

■ The Minor

The department offers a minor program for students majoring in other fields of study. The program consists of a general minor and the following four concentrations: history of art and architecture, graphic design, photography, and studio art. The number of courses required for the minor does not exceed seven. Students interested in the minor program should consult the department chair.

■ Special Programs

See Center for Asian Studies, Center for the Humanities, Independent Major, International Cooperative Education, Irish Studies Program, Media Studies Minor, New England Conservatory Affiliation, and Performing and Visual Arts in the Special Programs section, which begins on page 96.

Department of Music

Joshua R. Jacobson, D.M.A., *Professor and Chairman*

Professors

Reginald Haché, Art. Dip.
Roland L. Nadeau, M.M.

Associate Professors

Julia A. Griffin, Ph.D.
Dennis H. Miller, D.M.A.

David Sonnenschein,

D.M.A.
Judith Tick, Ph.D.

Assistant Professors

Kenneth P. Ayoob, D.M.A.
Leonard Brown, Ph.D.

Lecturers

Steven Cornelius, D.M.A.
Douglas Durant, M.F.A.
George F. Litterst, M.M.
Charles Mokotoff, M.M.
Karen L. Pokross, Ed.M.

Degree Offered: Bachelor of Arts

Music speaks directly to the soul. The experience of the masterworks of the musical art is one of the cornerstones of a humanistic education.

assistant stage managers. Appearing in a production is not a substitute for crew work, and all those concentrating in a performance aspect must also participate in crew activities.

Theatre majors must maintain a regimen of physical conditioning while in residence. The following courses, when available, are recommended: Modern Dance, Ballet, Jazz Dance, Tumbling, Gymnastics, Fencing, and Physical Conditioning.

■ **The Minor**

Students majoring in other departments may choose a minor in theatre to complement their academic majors or to assist them in developing career goals by taking eight courses (thirty-two quarter hours). Closely supervised by a departmental faculty adviser, students may follow programs of study that offer a generalized or a specialized program. Specialized areas are in acting, scenic design, costume design, lighting design, and literature and criticism.

■ **Special Programs**

See American Sign Language Programs, Center for Asian Studies, Center for the Humanities, Center for the Study of Sport in Society, Film Studies Minor, International Cooperative Education, Irish Studies Program, and Performing and Visual Arts in the Special Programs section, which begins on page 96.

Humanities

The humanities comprise the intellectual heritage of human beings and the great traditions of civilization. Basic questions that confront every generation, such as the nature of truth, knowledge, and beauty, are central to their purposes; the ideas, texts, and traditions that have shaped us as people are their unifying materials.

Academic departments and other units within the Humanities area at Northeastern University are English, Journalism, Modern Languages, Philosophy and Religion, and Speech Communication. These departments are related not only by their exploration of common areas of knowledge but, more important, by their reliance on such analytical processes as careful reading and critical thinking. Thus, civilization is understood and the humanities are preserved.

In the College of Arts and Sciences, these are the major disciplines comprising the humanities.

- English, pages 62–63
- Journalism, pages 107–108
- Modern Languages, pages 63–65
- Philosophy and Religion, pages 65–67
- Speech Communication, pages 67–68

Department of English

Kinley E. Roby, Ph.D., *Professor and Chairman*

Professors

Samuel J. Bernstein, Ph.D.
Robert J. Blanch, Ph.D.
Francis C. Blessington,
Ph.D.

Irene Fairley, Ph.D.
Gary Goshgarian, Ph.D.
Earl N. Harbert, Ph.D.
M. X. Lesser, Ph.D.

James E. Nagel, Ph.D.
Guy Rotella, Ph.D.
Herbert L. Sussman, Ph.D.
Arthur J. Weitzman, Ph.D.
Paul C. Wermuth, Ph.D.
Joseph E. Westlund, Ph.D.

Associate Professors

Timothy R. Donovan, Ph.D.
Gerald R. Griffin, Ph.D.
Stuart S. Peterfreund, Ph.D.
Janet Randall, Ph.D.
Michael Ryan, Ph.D.
Kristin Woolever, Ph.D.

Assistant Professors

Kathy Howlett, M.A.
Nicholas Humy, Ph.D.

Kathleen Kelly, Ph.D.
Mary K. Loeffenholz, Ph.D.
Joyce H. Scott, Ed.D.
Henrietta N. Shirk, Ph.D.
Charles H. Sides, Ph.D.

Instructors

Richard C. Garth, M.A.
Linda Loehr, M.A.

Lecturers

Joseph deRoche, M.F.A.
David Tutein, M.A.

Continuing Lecturers

Beth I. Bennett, M.A.
Ken Capobianco, M.A.
Faye F. Cudmore, M.A.
Lance Dean, M.A.
Randy Garber, M.A.
Claire E. Knox, M.A.
Constance Leigh, M.A.
Ronald MacKay, M.A.
Eileen Mills, M.A.
Virginia C. Parsons, M.A.
Daniela Schaerer, M.A.
Bradley Smith, M.A.

Stephen Sutherland, M.A.
Marion Van Nostrand, M.A.

*Assistant to the
Coordinator of
Introductory Writing
Programs and Clinical
Instructor of English*
Lolly Ockerstrom, M.A.

*Assistant to the
Coordinator of Middler-
Year Writing
Requirement and
Clinical Instructor of
English*
Janet Carr, M.A.

*Coordinator of English
Studies and Clinical
Instructor of English*
Jean S. Mullen-Smith, M.A.

*Assistant to the Graduate
Programs and Clinical
Instructor of English*
Kalo Clarke, M.A.

Degrees Offered: Bachelor of Arts, Bachelor of Science

The Department of English curriculum is diverse in its aims and flexible in its design. For the general University community, the curriculum offers possibilities in creative, expository, and technical writing; linguistics; and American and British literature.

At a time when the price of imprecision in language is more than simple misunderstanding and the cost of changing values more than personal uncertainty, the study of literature provides "a momentary stay against confusion." It deals with the hard edge of being, an insight into the ways of men and women, at once clear and complex. In fact, the very structure of literature gives shape and meaning to the often formless experiences of life. And it does so with grace and force. Put another way, literature "tells it like it is," not statistically, not abstractly, but with the details of fully realized people in accessible worlds, in "imaginary gardens with real toads in them."

■ Professional Preparation

For preprofessional students—in law, medicine, business, engineering, or computer science—the Department of English offers a broad intellectual and cultural frame for specialist concerns. For the students who minor in English, it offers the possibility of concentration in literature, writing, linguistics, or technical communication to supplement the major concerns of other disciplines.

For the students who major in English, the curriculum offers the opportunity to pre-

pare for careers in teaching and research, advertising and publishing, radio and television—indeed, any field in which communication and judgment go hand in hand.

■ **The Major**

The curriculum for the major in English allows the student to take a wide variety of courses while maintaining a strong background in the history of British and American literature. After completing the freshman requirement, the English major takes survey courses, area courses (in language or writing, British literature, American literature, major figures, genres), other electives, and, finally, a Senior Seminar as the culmination of study. Students have the opportunity to study science fiction, African-American literature, topics in film, or children's literature as well as Shakespeare, early American literature, Romantic poetry, and topics in literary criticism. Independent study also may be arranged with an English instructor.

The requirements of the curriculum and its details are flexible enough to accommodate the pace and interest of a wide range of students. Members of the department are available throughout the year to help and advise students, but the critical choices rest essentially with each student. The major figure requirement, for example, may be met by successfully completing courses from among such recent offerings as Edgar Allan Poe, Ernest Hemingway, and Jane Austen, as well as Chaucer and Milton. To this area, as to others, the department regularly adds new courses.

■ **The Minor**

Students who minor in English may choose the minor in literature or in writing, either expository or creative. There are also interdisciplinary minors in linguistics and in technical communication, which are described in the Special Programs section of this bulletin. Within each minor, the student may select an individual course of study with the help of a Department of English adviser.

■ **Special Programs**

See American Sign Language Programs, Center for the Humanities, Independent Major, International Cooperative Education, Irish Studies Program, Linguistics Minor, Media Studies Minor, and Technical Communication Minor in the Special Programs section, which begins on page 96. See also *Nineteenth-Century Contexts* and *Studies in American Fiction* in the section on journals, page 106.

Department of Modern Languages

Holbrook C. Robinson, Ph.D., *Associate Professor and Chairman*

<i>Professor</i>	Walter M. Gershuny, Ph.D.	<i>Assistant Professors</i>
Constance H. Rose, Ph.D.	Juliette M. Gilman, Ph.D.	Ross D. Hall, Ph.D.
	Inez Hedges, Ph.D.	Robert B. Modee, M.A.,
<i>Associate Professors</i>	Neil A. Larsen, Ph.D.	<i>Executive Officer</i>
Israel A. Aluf, Ph.D.	Bonnie S. McSorley, Ph.D.	
Lillian Bulwa, Ph.D.	Stephen A. Sadow, Ph.D.	<i>Instructors</i>
Benedetto Fabrizi, D.M.L.	John Spiegel, Ph.D.	Anthony P. Esposito, M.A.
		Rita Schneider, M.A.

Degrees Offered: Bachelor of Arts, Bachelor of Science

The study of modern languages can be of value to all students, regardless of their major fields of interest. In the complex and rapid pace of modern life, there is a need

for increased communication among varied and often divergent cultures, even those within the narrow confines of one's own community. To better understand and appreciate these cultures, it is important to know the ways in which the members of the culture think.

As the principal means of communication, language frequently offers the key to understanding. Thus, language may serve to help one achieve a more cosmopolitan, open-minded, and sensitive view of the world.

■ Professional Preparation

The department offers opportunities for background preparation to students interested in elementary, secondary school, or college teaching; international business relations; high-tech fields; government service; journalism; library science; world affairs; travel; and community service, especially in Spanish-speaking areas. (Those who wish to teach in college must plan on graduate study.)

■ The Major

Available in French, German, Italian, Russian, or Spanish, the major in modern languages normally requires advanced courses in two languages. The freshman year usually is considered a time to establish the foundation on which the major will be formed. It should be used to fulfill as many general requirements as possible so that more time can be devoted to the major during the upperclass years. This year is also used to begin study of the first, principal language.

Normally, the study of a second language begins in the second year. However, in exceptional cases, students may begin their second language in the freshman year or, perhaps, postpone it to a later year. The student who majors in modern languages should plan to take at least two language electives per quarter from the beginning of the second year. Again, of course, this pattern may be varied to fit the needs of the individual student.

The requirements indicated here for the first and second languages are *minimum* requirements. When possible, a student is strongly encouraged to go beyond them, and even, perhaps, to pursue a third language.

The department is currently designing a one-language major. Students are urged to consult their department advisers for further information concerning this program and other possible curriculum changes.

The department offers a choice of either a bachelor of arts or a bachelor of science degree. For either, the student must select a primary as well as a secondary language from among French, German, Italian, Russian, and Spanish. Both degrees require Freshman English. Students planning to study Russian or Italian as a primary or secondary language should begin study as early as possible because the college is not able to offer these courses on a regular basis.

The bachelor of arts is the traditional degree of this discipline. Candidates for the B.A. must satisfy the college requirements for graduation and, in addition, must meet the departmental requirements in their major. These requirements are sixteen quarter hours in history (any history courses relevant to the major are acceptable), eight quarter hours of Survey of English Literature, a minimum of thirty-two quarter hours of advanced work in the primary language, and eight quarter hours of advanced work in the secondary language. Advanced work may be defined as any course beyond the intermediate level of the language.

The bachelor of science degree in modern languages differs from the B.A. primarily in its emphasis. Whereas the B.A. requires the student to satisfy the full general requirements of the College of Arts and Sciences, the B.S. waives certain of these requirements in favor of a more concentrated program in the major area.

In addition, candidates for the B.S. degree must complete eight quarter hours of composition and conversation in the first language and eight quarter hours of composition and conversation in the second language. Candidates then must complete forty additional quarter hours of advanced work in the primary language and sixteen additional quarter credits of advanced work in the secondary one.

■ **The Minor**

For students interested in acquiring proficiency in one foreign language as an adjunct to their major, the department offers a minor in modern languages, open to students of all colleges. The details of the requirements for a minor vary slightly from language to language, but in all cases the student is required to take a total of six courses. Generally, two composition and conversation courses, a civilization course, and an introductory course in literature are required. The remaining courses are free electives drawn from advanced courses offered by the department.

Students are urged to consult the department adviser for further information about the minor.

■ **Language Laboratories and Facilities**

In the basic language courses, attendance in the language laboratory is required for two half-hour sessions per week. The facilities of the language laboratory are also available on an optional basis for advanced work. The department lounge is available to Modern Language students. See pages 97–98 for information on courses in American Sign Language.

■ **Special Programs**

See American Sign Language Programs, Business German Course, Center for Asian Studies, Center for the Humanities, Elementary Spanish Course for Criminal Justice and Human Services Majors, French for Business and Economics Students, Independent Major, International Cooperative Education, Irish Studies Program, and Russian Studies Minor in the Special Programs section, which begins on page 96.

Department of Philosophy and Religion

Michael R. Lipton, Ph.D., *Associate Professor and Chairman*

<i>Professors</i>	<i>Associate Professors</i>	<i>Gordon E. Pruett, Ph.D.</i>
Walter L. Fogg, Ph.D.	William J. DeAngelis, Ph.D.	Susan M. Setta, Ph.D.
Pavel Kovaly, Ph.D., C.Sc.	Bart K. Gruzalski, Ph.D.	Joseph H. Wellbank, Ph.D.
Stephen L. Nathanson, Ph.D.	Edward A. Hacker, Ph.D.	

Degrees Offered: Bachelor of Arts, Bachelor of Science

Philosophy deals with a wide range of questions and issues generated by various aspects of human experience, by the beliefs and theories people hold, and by the practical problems human beings confront. Philosophy includes both questions and theories related to art, religion, morality, society, and natural and social sciences. Because of the breadth of philosophical concerns, the study of philosophy provides a unique opportunity for students to examine their beliefs in many areas through critical reflection.

Through readings, discussion, and writing, philosophy students can encounter and examine questions concerning the nature and validity of religious beliefs, moral judgments, and scientific theories, as well as questions of values and social policy in such

areas as law, medicine, and technology. In all these areas, analysis of issues and evaluation of arguments provide an opportunity to understand diverse claims to knowledge and areas of controversy.

■ Professional Preparation

The program includes courses that may help strengthen the student's work in other areas and provide an understanding of the methods and traditions of philosophical and religious thought. A major in philosophy may also help a student to acquire a broad background in the humanities and to sharpen his or her critical abilities in preparation for graduate or professional study. Former philosophy majors can be found in the most diverse of professional careers.

■ The Philosophy Major

Northeastern's program for a philosophy major is designed to offer students a balanced understanding of the nature of philosophy and particular philosophical problems that arise in the various arts and sciences. A maximum number of electives has been provided so that students may choose in accordance with their own backgrounds and interests. Students may pursue either a five-year cooperative or a four-year full-time course of study.

All degree candidates in philosophy must take at least eight quarter hours in English and fifty-two quarter hours in the department and must meet the following specific requirements:

- Classical Greek Philosophy and Modern Philosophy;
- Introduction to Logic or Symbolic Logic (the department emphatically recommends that students contemplating graduate studies in philosophy take Symbolic Logic);
- Theory of Knowledge or Metaphysics or Moral Philosophy;
- At least one seminar;
- Thirty-two quarter hours of philosophy electives, to be selected after consultation with the student's departmental adviser.

■ Religion Program

The program in religion offers students the opportunity to acquire an understanding of religious experience, both as an individual response and within its social, historical, literary, and political context. Specific religions (such as Christian, Jewish, Hindu) are studied, as are the mythical and mystical dimensions of religious experience in general. The program strives to clarify the relation between the religious experience and other facets of human life that are the concern of both the liberal arts and the professions. Although a major is not offered in religion, the program attempts to provide a basic introduction to religious studies. Both introductory and intermediate-level courses are offered.

■ The Minor

To attempt to meet the needs of students who are majoring in other areas but have a special interest in philosophy, the department offers a minor in philosophy. The program contains an essential core of courses, as well as a great range of electives to accommodate individual interests. Specific requirements follow:

- An introduction to philosophy course;
- Either Classical Greek Philosophy or Modern Philosophy;
- Either Introductory Logic or Symbolic Logic;
- Moral Philosophy or Theory of Knowledge or Metaphysics or Philosophy of Mind;
- Three electives in philosophy to bring the total number of quarter hours in philosophy to twenty-eight.

■ Special Programs

See Center for Asian Studies, Center for the Humanities, Independent Major, International Cooperative Education, and Women's Studies Minor in the Special Programs section, which begins on page 96.

Department of Speech Communication

Alan J. Zaremba, Ph.D., *Associate Professor and Acting Chairman*

Associate Professors

Carl W. Eastman, M.A.

Michael L. Woodnick, M.S.

Adjunct Assistant

Professor

Joan F. Drexelius, Ph.D.

Joanne Morreale, Ph.D.

Thomas Sharor, M.A.

Philip Sirkin, M.B.A.

Assistant Professors

Karen S. Buzzard, Ph.D.

Roberta L. Kosberg, Ph.D.

Lecturers

Joseph Castiglione, M.S.

David Knapp, M.S.

Instructor

Patricia Knapp, M.S.

Degrees Offered: Bachelor of Arts, Bachelor of Science

The Department of Speech Communication seeks to help stimulate personal and professional growth through a study of the principles and methods of communication.

Courses are designed to aid students in understanding the communication process and the functions of communication in society. The speech communication program also helps students to increase their self-awareness and heighten personal development by offering theoretical and experiential learning opportunities.

■ Professional Preparation

The objectives of the speech communication major are threefold:

- To stimulate the student's personal growth and development in perception and self-expression through the study of historical, contemporary, and artistic aspects of speech and communication, and to provide organized knowledge and critical insight;
- To help prepare the student for professions that require both a theoretical and a technical knowledge of communication, such as broadcasting, the law, government service, public relations, advertising, social service, industrial communication, and similar fields;
- To help prepare the student for advanced graduate study in communication and other professional fields.

■ The Major

Students may receive either a bachelor of arts or bachelor of science degree in speech communication through concentrations in radio and television; interpersonal and organizational communication; research and theory; rhetoric, advocacy, and public address; and general speech. Through selection of the appropriate concentration within the department and complementary elective courses in other departments, students may tailor their programs to satisfy their personal and professional needs.

To further provide for the needs of students with individual interests or professional goals, the department offers directed-study and internship programs. Virtually every student who majors in speech communication can complete one or more projects in each of these programs.

Directed Study In directed study, the student works closely with a chosen faculty adviser while completing a student-selected research or performance project. Generally commensurate with the work load of a one-quarter course, directed-study projects deal with such areas as surveying and interpreting communicative behavior, studies of the rhetoric of political campaigns, and the effects of the media on society.

Internship Program The internship program offers students the opportunity for professional development through field experiences designed to complement or implement their classroom training. Distinct from the co-op plan, the internship program provides academic credit for unpaid, part-time, on-site activities during the student's academic quarters. Internships, carefully selected by the student and faculty advisers with an understanding based on the student's goals, often result in the student's placement in active roles in commercial broadcasting studios, advertising firms, and governmental agencies.

■ The Minor

Students majoring in such fields as political science, business, and human or social services or education may develop a minor in speech communication that complements their academic major by selecting appropriate courses with the aid of a speech communication faculty adviser.

Basic theoretical competence and personal skills in the areas of interpersonal, group, organizational, and public communication may be acquired by taking the following four core courses required of all minors: Introduction to Communication Theory, Business and Professional Speaking, Interpersonal Communication I, and Group Discussion.

Individual needs and specific goals may be satisfied by selecting four additional electives with the approval of the speech communication faculty. Recommended elective groupings have been developed for students concentrating in management, marketing, elementary or secondary education, human or social services, political science, sociology, psychology, and journalism.

■ Special Programs

See American Sign Language Programs, Center for Asian Studies, Center for the Humanities, Film Studies Minor, Independent Major, International Cooperative Education, and Technical Communication Minor in the Special Programs section, which begins on page 96.

Sciences and Mathematics

The natural and physical sciences comprise disciplines that analyze the nature and properties of energy and matter. Most of the hypotheses posed are tested using numerical measurements. For this reason, mathematics occupies a special place among the sciences; it provides the theoretical underpinnings for much data analysis.

The disciplines of biology, chemistry, geology, mathematics, and physics all focus on understanding the fundamental properties of a system or of principles that govern a system. These essentials of knowledge—whether operative in structure, organization, or process—provide the means by which we understand the world around us.

In the College of Arts and Sciences, the major disciplines constituting sciences and mathematics are as follows:

- Biology, pages 69–71
- Chemistry, pages 72–73
- Geology, pages 74–75
- Mathematics, pages 75–76
- Physics, pages 77–79

Department of Biology

Gwilym S. Jones, Ph.D., *Professor and Acting Chairman*

Professors

Francis D. Crisley, Ph.D.
Charles A. M. Meszoely,
Ph.D.
M. Patricia Morse, Ph.D.
Fred A. Rosenberg, Ph.D.
Ernest Ruber, Ph.D.
Kenneth P. Sebens, Ph.D.
Phyllis R. Strauss, Ph.D.
Carol Warner, Ph.D.

Associate Professors

Joseph L. Ayers, Ph.D.
Kostia Bergman, Ph.D.

Donald P. Cheney, Ph.D.
Charles H. Ellis, Jr., Ph.D.
Aileen F. Knowles, Ph.D.
Helen H. Lambert, Ph.D.
Richard L. Marsh, Ph.D.
Susan Powers-Lee, Ph.D.
Daniel C. Scheirer, Ph.D.
Henry O. Wertz, Ph.D.

Assistant Professors

John W. Bodnar, Ph.D.
Frederick C. Davis, Ph.D.
H. William Detrick, Ph.D.
Jacqueline M. Piret, Ph.D.

Maryellen Povino-Bodnar,
Ph.D.
Wendy A. Smith, Ph.D.
Jon D. Witman, Ph.D.

Emeritus Professors

Charles Gainor, Ph.D.
Nathan W. Riser, Ph.D.

Adjunct Professor

Bruce B. Collette, Ph.D.

Adjunct Assistant

Professor
Barbara L. Thorne, Ph.D.

Degrees Offered: Bachelor of Arts, Bachelor of Science

The biology major offers students the opportunity to develop a basic understanding of the organization and the processes of life, from the level of molecules and cells through the level of organs and organ systems to the level of populations, species, ecosystems, and evolution. The major also offers the mathematical, chemical, and physical background necessary to understand biology and to help train students in practical scientific skills associated with each of these areas of study. Finally, it allows students to begin to specialize in a subdiscipline of biology.

■ Professional Preparation

The biology major provides an opportunity for excellent preparation for a wide variety of careers or professions in the life sciences, including medical, dental, and other health-related professions. Graduate study leading to a master's or doctoral degree can open careers in upper-level teaching and/or research in one of the specialized areas of biology, such as zoology, botany, microbiology, physiology, ecology, marine biology, cell biology, molecular biology, or biochemistry. Biology majors may also pursue postgraduate training in such health-related areas as nutrition, public health, or medical technology.

Students who major in biology but who do not wish to enter professional or graduate schools may find employment on technical levels in federal, state, industrial, hospital, or university laboratories doing research, survey, or quality control in a biological area. They may also be able to enter directly into positions in industries involved in the manufacture and distribution of pharmaceuticals, biological products, food, or scientific equipment. Many biologists are employed at all levels in fisheries, forestry services, county and state agencies, museums, aquariums, research vessels, and marine stations.

Preprofessional students (for example, premedical or predental) are urged to consult with the preprofessional advisory committee early in their careers at Northeastern. *Students are cautioned that the successful completion of the required preprofessional courses by no means ensures admission to a professional school; other factors are also involved.*

■ The Major

The major consists of ten biology courses in addition to those required in chemistry, physics, and mathematics. Six of the biology courses constitute the required "Biocore": Principles of Biology I, II, and III; Environmental and Population Biology; Genetics and Developmental Biology; and Cell Physiology and Biochemistry. The other four biology courses for the major may be chosen from a variety of upperclass biology electives that require some or all of the Biocore as prerequisites. It is usually possible to follow the prescribed sequence if a student has decided on the major in the freshman or sophomore year. For students who may enter the major in the middler year, it is often possible to complete the major in the normal time by taking some of the electives concurrently with the Biocore courses.

To graduate with a major in biology, a student must have a cumulative quality-point average (QPA) of 2.0 for all science and mathematics courses required for the major. There are two programs within the biology major, one leading to the bachelor of arts degree and the other to the bachelor of science degree. Both the bachelor of arts and the bachelor of science degrees require a modern language. The B.S. program is more rigorous and extensive in its mathematics and science requirements and thus may offer better preparation for some areas of postgraduate study. The difference is mainly one of emphasis, however.

After completing the Biocore, students interested in independent research may arrange with individual faculty to undertake directed study; if eligible, they may be invited to undertake a more extensive honors program involving up to four quarters of research.

The department publishes a booklet, *The Biology Undergraduate Advisory Book*, which explains the required and recommended courses and the QPA standards in science for biology majors. The *Advisory Book* is available in the Office of Biology, 414 Mugar Hall. Students intending to major in biology should obtain a copy as early

as possible after their enrollment at Northeastern. Biology majors wishing to pursue a minor in another field should see their biology adviser as early in their program as possible.

■ The Minor

A minor in biology consists of any six biology courses for which the student has the prerequisites, plus two more courses that may be biology courses or courses from other departments that serve as prerequisites for biology courses. At least five of the total eight courses must include laboratory, and a student may not count toward the biology minor more than one course, or course sequence, that covers substantially the same material.

To accommodate the needs of students majoring in different fields, the biology minor requirements have been phrased in a general and flexible way. To ensure that course selection is sound and appropriate to the student's background, *each student's biology minor program must receive the signed approval of the biology minors' adviser*. The student should obtain this required approval of his or her program before the start of or, at the latest, by the end of the first biology course. Failure to do so may result in courses not being counted for a minor, if the adviser finds them to have been inappropriate selections.

The academic standards for a minor in biology are the same as those for a biology major; namely, a QPA of 2.0 must be achieved for those courses used to satisfy the minor requirements. Courses taken on a pass/fail basis are not acceptable for minor credit.

Suggested course groupings for a biology minor have been developed for students with different backgrounds in college mathematics and science. The core minor for students with considerable course work in mathematics, chemistry, or physics provides the basic foundation on which a biology major is built, without advanced specialization. For students with less college mathematics/science background—or none—three other minor options provide the opportunity for first-level exposure to the basic principles of biology. In addition, this option gives them an opportunity to achieve some advanced specialization in plant and/or animal studies or to explore human biology, molecular biology, biochemistry, and the problems of the environment. For further information, consult with the biology minors' adviser.

■ Laboratories

The Department of Biology has specially equipped teaching laboratories for general biology, botany, anatomy, microbiology, microscopy, physiology, zoology, cell biology, molecular biology, and biochemistry. Equipment for fieldwork, museum specimens, models, and charts are employed in laboratory instruction. Additional facilities include aquarium and animal rooms, stockrooms, preparation rooms, research areas, a vertebrate museum and herbarium, and a large suburban greenhouse and woodlot. The department has close association with the University's Marine Science and Maritime Studies Center in Nahant and with the University's Electron Microscopy Center.

■ Special Programs

See Combined Program with Preprofessional Schools, East/West Marine Biology Program, Independent Major, International Cooperative Education, Marine Studies Minor, and School for Field Studies Affiliation in the Special Programs section, which begins on page 96. See also information on the instrumentation for science minor in the Physics section, page 79.

Department of Chemistry

Philip M. Warner, Ph.D., *Professor and Chairman*

Professors

Geoffrey Davies, Ph.D.

David A. Forsyth, Ph.D.

Bill C. Giessen, Dr.Sc.Nat.

Arthur M. Halpern, Ph.D.

Robert N. Hanson, Ph.D.*

Barry L. Karger, Ph.D.

Philip W. Le Quesne, Ph.D.,
D.Sci.

John L. Neumeyer, Ph.D.*

Robert F. Raffauf, Ph.D.,*

Emeritus

William M. Reiff, Ph.D.

John L. Roebber, Ph.D.

Alfred Viola, Ph.D.

Paul Vouros, Ph.D.

Associate Professors

Thomas R. Gilbert, Ph.D.

David M. Howell, Ph.D.

Conrad M. Jankowski,
Ph.D.

Elmer E. Jones, Ph.D.

Michael E. Kellman, Ph.D.

Ira S. Krull, Ph.D.

Kay D. Onan, Ph.D.

Mary J. Ondrechen, Ph.D.

Robert N. Wiener, Ph.D.

Lawrence D. Ziegler, Ph.D.

Supervisor of

Laboratories

Bernard J. Lemire, B.S.

Degrees Offered: Bachelor of Arts, Bachelor of Science

Chemistry is concerned with the structure and properties of substances and with the transformations they undergo. Modern chemistry is the cornerstone for a large number of professions and industries. The educational objectives of the Department of Chemistry are threefold:

- To experience the intellectual stimulation of studying a physical science;
- To grasp the basic principles and techniques central to a variety of chemistry-related careers;
- To prepare for graduate study in chemistry or related fields.

■ Professional Preparation

Challenging career opportunities exist in almost all technical fields in which such functions as research, development, production, sales, market analysis, quality control, and management are involved. The chemistry major programs at Northeastern are based on a career-oriented concept and offer students an excellent opportunity to prepare for the study of medicine and dentistry and to do advanced study in many fields of science.

The basic core of courses in chemistry, mathematics, and physics may be supplemented by selected courses in other areas. Alumni have pursued careers in many areas, such as:

- Chemical sales and management;
- Clinical chemistry, medicinal chemistry, and pharmaceutical chemistry;
- Forensic chemistry;
- Geochemistry, mineralogy, and environmental chemistry;
- The health professions (medicine, dentistry);
- Professional and technical employment in industry;
- Teaching and research (via graduate study).

* Joint appointment with College of Pharmacy and Allied Health Professions

■ The Major

The Department of Chemistry offers two major programs that lead to the bachelor of arts or bachelor of science degree. The department is relatively small, having a combined total of about forty students throughout all levels. All courses are taught by full-time chemistry faculty members, and, since classes are small, there is considerable opportunity for direct interaction between faculty and students. The two degree curricula differ mainly in their arts and sciences content and advanced science course requirements.

A large part of the curriculum is common to all options, consisting of courses in English, calculus, physics, and basic chemistry, which are taken in the freshman year. Students may be exempted from the general chemistry courses by passing equivalency tests. In this case, other courses are substituted. In the upperclass years, students take courses in organic, inorganic, physical, and analytical chemistry. For the B.S. degree, some additional advanced mathematics and science courses are required. German or Russian is strongly recommended for students who plan to pursue graduate study in the sciences.

Qualified students are encouraged to undertake a research program under the supervision of a faculty member. An honors program is open to especially able students.

The department publishes an informational booklet, *Chemistry at Northeastern*, which describes the chemistry major curriculum and requirements in detail. Interested students may obtain a copy in the main office of the Department of Chemistry, 102 Hurtig Hall, or from the Department of Undergraduate Admissions, 150 Richards Hall.

■ The Minor

A minor program in chemistry is available for students majoring in other fields. It consists of courses in general, analytical, organic, and physical chemistry. Further information may be obtained from the Department of Chemistry, 102 Hurtig Hall.

■ Accreditation

The chemistry programs at Northeastern are approved by the American Chemical Society (A.C.S.). The B.S. degree meets the society's requirements for certification, which means that a certified graduate is eligible for full membership in the A.C.S. after two years of experience.

■ Facilities and Research

The main facilities of the department are housed in Hurtig Hall, a modern, air-conditioned, five-story building that contains equipment for up-to-date teaching and research. Faculty offices are located there, as is the James Flack Norris Room, which serves as a lounge for undergraduate chemistry majors. Additional research facilities are located in the Barnett Institute. The department's major research equipment includes electron microscopes, mass spectrometers, lasers, X-ray diffractometers, nuclear magnetic-resonance spectrometers, Gouy and Faraday magnetic balances, Mössbauer spectrometers, and a variety of ultraviolet and infrared spectrometers. Undergraduate students taking advanced courses or working on research projects may use certain of these instruments.

■ Special Programs

See Combined Program with Preprofessional Schools, East/West Marine Biology Program, Independent Major, International Cooperative Education, Marine Studies Minor, and School for Field Studies Affiliation in the Special Programs section, which begins on page 96. See also information on the instrumentation for science minor in the Physics section, page 79.

Department of Geology

Richard H. Bailey, Ph.D., *Associate Professor and Chairman*

Professors

Richard S. Naylor, Ph.D.

William A. Newman, Ph.D.

Associate Professors

Bernard L. Gordon, M.S.

Peter S. Rosen, Ph.D.

Martin E. Ross, Ph.D.

Assistant Professor

Malcolm D. Hill, Ph.D.

Degrees Offered: Bachelor of Arts, Bachelor of Science

The Department of Geology offers a degree program in geology as an in-depth study of a major area of the earth sciences, as well as courses in geology, oceanography, and astronomy, which are available to all students.

Geology is a broad-based science that deals with the study of the physical features, composition, history, and processes of the earth. The study of geology also demands an understanding of the application of scientific knowledge to current problems and concerns. For example, the manufacture of an enormous number of products composed of metals and petroleum derivatives is a primary basis of our society's economy. Understanding the origins of these natural resources and the ways in which to ensure their continued supply is, therefore, an important role of today's geologists. Many geologists are involved in development and maintenance of precious water resources and in analysis of numerous environmental problems. Only a small portion of the earth has been studied in detail, leaving many unexplored frontiers for each new graduate in the field.

■ Professional Preparation

Northeastern University's geology program offers the basic knowledge required to work in almost any of the geological professions, in both industry and government. Graduates are currently working for geotechnical, consulting, or engineering firms, studying environmental problems such as groundwater contamination, or analyzing sites proposed for new construction. A number of geology graduates also work in the oil industry and for government agencies.

■ The Major

Since the study of geology uses principles of other physical sciences, students should complete basic courses in chemistry, physics, and mathematics along with physical and historical geology during their first two years. After completing the introductory geology courses and one year of chemistry, every geology major takes a three-course sequence—Descriptive Mineralogy, Optical Crystallography, and Optical Mineralogy—since a knowledge of minerals is fundamental to geological understanding. In addition to the required introductory and mineralogy courses, the student chooses a minimum of six (for the B.A. degree) or eight (for the B.S. degree) additional geology courses. Electives are also required in the areas of the humanities and social sciences.

Each student is assigned to an adviser in the department. The adviser assists students in making appropriate course selections as their knowledge increases and special interests develop. Although not required, courses in petrology, structural geology, and paleontology are usually among the electives chosen by undergraduates.

During the junior and senior years, students may select undergraduate research as one of their elective courses. Under the supervision of a faculty member, a problem is selected, defined, and researched. These projects offer undergraduates the opportunity to go much more deeply into some aspect of geology that holds particular interest for

them. Students who meet the college requirements for the honors program may also be invited to carry out an undergraduate research project.

■ **The Minor**

The Department of Geology offers a minor in geology.

■ **Field Trips**

Although much geology can be learned from textbooks and in the laboratory, a sound geological education must also include first-hand experience in the field and direct observation of geological phenomena. Whenever it is appropriate, fieldwork on an individual or group basis will be part of courses.

■ **Special Programs**

See East/West Marine Biology Program, Independent Major, International Cooperative Education, Marine Studies Minor, and School for Field Studies Affiliation in the Special Programs section, which begins on page 96. See also information on the instrumentation for science minor in the Physics section, page 79.

Department of Mathematics

Margaret B. Cozzens, Ph.D., *Professor and Chairperson*

<i>Professors</i>	<i>Associate Professors</i>	Thomas O. Sherman, Ph.D.
Samuel J. Blank, Ph.D.	Mark Bridger, Ph.D.	Gordana G. Todorov, Ph.D.
Gail Carpenter, Ph.D.	Robert W. Case, Ph.D.	
Bohumil Cenk, Sc.D.	Bruce Claflin, M.S.	<i>Assistant Professors</i>
David I. Epstein, Ph.D.	John Frampton, Ph.D.	Florin Abram, Ph.D.
Holland C. Filgo, Ph.D.	Terence Gaffney, Ph.D.	Margaret Bayer, Ph.D.
Alberto R. Galmarino, Ph.D.	Eugene Gover, Ph.D.	David Bernstein, Ph.D.
Maurice E. Gilmore, Ph.D.	Samuel Gutmann, Ph.D.	Mo-suk Chow, Ph.D.
R. Mark Goresky, Ph.D.	Anthony Iarrobino, Ph.D.	Stanley J. Eigen, Ph.D.
Arshag B. Hajian, Ph.D.	Solomon M. Jekel, Ph.D.	N. V. R. Mahadev, Ph.D.
Evelyn F. Keller, Ph.D.	Donald R. King, Ph.D.	Alex Martinskovsky, Ph.D.
Richard Porter, Ph.D.	Nishan Krikorian, Ph.D.	Carla B. Oblas, M.S.
Jayant Shah, Ph.D.	Venkatrama Lakshmibai,	M. Inez Platzcek, Ph.D.
Gabriel Stolzenberg, Ph.D.	Ph.D.	Alexandru Suci, Ph.D.
Chuu-Lian Terng, Ph.D.	Marc Levine, Ph.D.	Barbara Tabak, Ph.D.
Jack Warga, Ph.D.	Robert C. McOwen, Ph.D.	Jerzy Weyman, Ph.D.
	Mark Ramras, Ph.D.	Bing Zhou, Ph.D.
	Martin Schwarz, Ph.D.	

Degrees Offered: Bachelor of Arts, Bachelor of Science

The Department of Mathematics offers interested students the opportunity to develop and expand their abilities in this exact science, one of the oldest and most basic of all the sciences. Mathematics has become the foundation and a rich source of methods for most science and technology. Mathematicians possess the skill to analyze the crucial features of many diverse problems and apply rigorous techniques to solve them.

■ Professional Preparation

Mathematical training may lead to opportunities in a large variety of fields of applied research (natural sciences, engineering, economics, management, computer science, to name a few) as well as the more traditional options of mathematical research, teaching, and/or jobs in industry. Because of so many available directions, mathematics students have great flexibility in planning their studies according to specific goals.

■ The Major

The department offers two programs of study in mathematics. One leads to a bachelor of arts degree and requires a minimum of thirteen mathematics courses. Students in the bachelor of arts program also must complete a foreign language requirement. Because mathematics-related material is often written in French, German, Italian, or Russian, one of these languages is recommended. The other program leads to a bachelor of science degree. It requires a minimum of sixteen mathematics courses but does not require the study of a foreign language.

All students must take a basic sequence of mathematics courses, which, as a rule, should be completed by the end of the sophomore year. The sequence offers students the opportunity to acquire a working knowledge of the calculus of one and several variables, differential equations, combinatorics, some linear algebra, and numerical methods. With respect to the latter, although a computer programming course is not required, students will be encouraged and eventually expected to learn the basic programming skills necessary for numerical solutions of complex problems.

A transition from the basic sequence to more advanced parts of the curriculum is provided by Analysis I–II and Advanced Linear Algebra I. These courses are prerequisites for many advanced courses in applied analysis, complex analysis, topology, and foundations.

As a rule, students planning to take a substantial number of mathematics courses (for example, two per quarter) should take Analysis I–II and Advanced Linear Algebra I in the middler year. Students may wish to take a prerequisite for more advanced courses in algebra and/or one that includes linear, nonlinear, and dynamic programming. Courses in probability, statistics, and numerical analysis may also be taken directly after the basic sequence.

■ Double Majors

It is possible for mathematics majors to follow programs leading to a double major in mathematics and another discipline from the College of Arts and Sciences or the College of Computer Science.

■ The Minor

No minor is offered.

■ Teaching Certification

A student who majors in mathematics can apply for Massachusetts certification to teach in high school at the same time that he or she receives the bachelor's degree in mathematics. All that is necessary is successful completion of the requirements for a major in mathematics, six specific courses in education, and one quarter of practice teaching.

■ Special Programs

See Independent Major and International Cooperative Education in the Special Programs section, which begins on page 96. See also information on the instrumentation for science minor in the Physics section, page 79.

Department of Physics

Stephen Reucroft, Ph.D., *Professor and Chairman*

Professors

Ronald Aaron, Ph.D.
Petros N. Argires, Ph.D.
Arun Bansil, Ph.D.
Alan H. Cromer, Ph.D.
William L. Faissler, Ph.D.
Marvin H. Friedman, Ph.D.
David A. Garelick, Ph.D.
Marvin H. Gettner, Ph.D.
Michael J. Glaubman, Ph.D.
Haim Goldberg, Ph.D.
Walter Hauser, Ph.D.

Jorge V. Jos  , Ph.D.

Bertram J. Malenka, Ph.D.
Pran Nath, Ph.D.
Clive H. Perry, Ph.D.
Eugene J. Saletan, Ph.D.
Carl A. Shiffman, Ph.D.
Jeffrey B. Sokoloff, Ph.D.
Yogendra N. Srivastava,
Ph.D.
Michael T. Vaughn, Ph.D.
Eberhard von Goeler, Ph.D.
Allan Widom, Ph.D.
Fa Yueh Wu, Ph.D.

Associate Professors

Paul M. Champion, Ph.D.
Marie E. Machacek, Ph.D.
Robert S. Markiewicz,
Ph.D.

Assistant Professors

George O. Alverson, Ph. D.
Narendra K. Jaggi, Ph.D.
Alain S. Karma, Ph.D.
Jacqueline Krim, Ph.D.
Ian Leedom, Ph.D.
Russell LoBrutto, Ph.D.
Srinvas Sridhar, Ph.D.

Degrees Offered: Bachelor of Arts, Bachelor of Science

Physics is concerned with the fundamental principles that govern natural phenomena, ranging in scale from collisions of subatomic particles through the behavior of solids and liquids to exploding stars and colliding galaxies.

Understanding these principles can help us unravel, explore, and predict the basic phenomena and processes not only of physics but also of biology, chemistry, and the earth and space sciences. Such an understanding will also help with the creation, development, and operation of a broad spectrum of micro and macro devices ranging from the silicon chip electronic systems and lasers of today's high technology to the more conventional mechanical and electrical instruments and machinery currently used in research and industrial organizations.

■ Professional Preparation

Students who major in physics are offered the opportunity to prepare for a wide variety of careers. In addition to work in industrial, government, and high-technology laboratories in areas of applied physics, students who have mastered the fundamental principles emphasized in a physics education may find opportunities in such allied fields as biophysics, computer sciences, geophysics, medical and radiation physics, and various branches of engineering. Many students majoring in physics go on to pursue advanced degrees in physics and related fields.

The educational objectives of the physics undergraduate programs are to provide students with the opportunity to:

- Experience the intellectual stimulation of studying science, specifically, physics and astrophysics;
- Experience, by association, the excitement of the front-line research programs going on in the department;
- Achieve an understanding of the basic principles and techniques central to the broad array of physics-related careers;
- Prepare for graduate study in physics or related fields.

To this end, the Department of Physics offers undergraduate courses at four levels:

- Descriptive courses intended primarily for nonscience majors with limited mathematical backgrounds;

- General survey courses intended for students in scientific and engineering fields;
- Advanced courses focusing on particular areas of physics and intended mainly, but not exclusively, for physics majors;
- Highly advanced courses intended mainly, but not exclusively, for prospective graduate students in physics.

A student majoring in physics may follow either a four-year full-time program or a five-year co-op program. The co-op program allows students to alternate between the classroom and off-campus work experiences in research and professional organizations located not only in the high-technology centers in and around Boston but also elsewhere in the United States. In a number of cases, physics majors work on co-op with a high-technology company and then return to school and work with a related aspect in one of the research programs of the department either for credit or as work-study.

■ The Major

Students majoring in physics may obtain one of three degrees: the bachelor of arts in physics, the bachelor of science in physics, or the bachelor of science in applied physics. They may follow either a four-year full-time program or a five-year co-op program.

The freshman-year program for all physics majors includes a three-quarter physics sequence common to all science and mathematics majors and a three-quarter calculus sequence. The remaining courses in each quarter of the freshman year can be chosen from a wide range of electives, but generally students are advised to meet some of the core curriculum requirements and perhaps to learn to use the computer.

Beyond the basic freshman-year survey courses in physics and mathematics, B.A. students are required to pass the two second-year intermediate physics courses, three upper-division lecture courses, three upper-division laboratory courses, as well as one upper-division mathematics elective. In addition, the college requirements must also be satisfied. This program is extremely flexible and allows the B.A. physics major to pursue other interests in depth.

Candidates for either of the B.S. physics degrees must complete the two intermediate physics courses, the second year of the calculus sequence, and a year of differential equations. In addition, the B.S. candidates must satisfy the appropriate college requirements. Candidates for the B.S. in physics must also complete seven upper-division physics lecture courses, three upper-division physics laboratory courses, and five additional technical electives (courses from the sciences, mathematics, or engineering departments). The B.S. in physics program is most appropriate for those students who wish to pursue graduate study in physics.

In addition to the common intermediate-level courses described above, candidates for the B.S. degree in applied physics must complete three upper-division physics lecture courses, five upper-division physics laboratory courses, three computer science courses, and four additional technical electives. The B.S. in applied physics program is most appropriate for those students who expect to proceed directly to work after the B.S. degree or who expect to go to graduate school in related fields.

The upper-division lecture courses offered by the department include Mechanics, Wave Motion and Optics, Thermodynamics, Electromagnetic Theory, Quantum Mechanics, Mathematical Physics, Nuclear Physics, Solid State Physics, and Astrophysics. The upper-division laboratories include Wave Motion, two quarters of Electronics, a laboratory devoted to microcomputer programming and interfacing, and a special project laboratory in which the student designs and carries out a complete project involving either some aspect of instrumentation or some aspect of computational physics.

■ The Minors

The Department of Physics offers two minor programs for students majoring in other fields: the physics minor and the instrumentation for science minor.

The physics minor program is designed to accommodate many interests while still providing a study of the fundamentals. To fulfill the requirements of this minor, a student must take four intermediate and/or advanced courses after completing introductory physics. Computer science and engineering students may have slightly different requirements for a physics minor.

The instrumentation for science minor offers experience in the use of common laboratory instruments, the taking and the analysis of data, and elementary skills in electronics. A major goal of the minor is to prepare the student to design and construct relatively small-scale special-purpose measurement instrumentation. To fulfill the requirements of the minor a student must take four intermediate and/or advanced laboratory courses after completing introductory physics.

Further information on the minor programs may be obtained from the Department of Physics, 112 Dana Research Center.

■ Honors Program and Undergraduate Research

Undergraduate students invited into the Honors Program may take graduate courses, reading courses, and special topics courses, by petition, in the various research fields of the department. Such work occasionally leads to presentation of papers at professional meetings and to publication in professional journals.

■ Facilities

The Department of Physics is housed in the Dana Research Center, a modern, air-conditioned building with a library; research laboratories, department and student machine shops; electronics shop; conference and seminar rooms; and faculty, graduate, undergraduate student offices. The department has its own computer facility, including several computers dedicated to individual physics research projects. In addition, there is a department terminal cluster providing access via the University-wide network to the VAX 8650 in the University Computer Center as well as to a number of other computers.

Besides working at the research facilities on campus, faculty and graduate students currently pursue their research at a variety of off-campus national and international facilities: high-energy physics experiments at the Stanford Linear Accelerator Center (SLAC), Palo Alto, California, at CERN, Geneva, Switzerland, and at the Fermi National Accelerator Laboratory (Fermilab), Batavia, Illinois; high-magnetic-field experiments at the National Magnet Laboratory, Cambridge, Massachusetts; and inelastic neutron scattering experiments at the Brookhaven National Laboratory, New York, at the Oak Ridge National Laboratory, Oak Ridge, Tennessee, and at the Laue-Langevin Institute, Grenoble, France.

The department's full-time faculty are involved in a broad spectrum of front-line experimental and theoretical programs in astrophysics, atomic and molecular physics, biophysics, elementary particle physics, and solid state and low temperature physics. A full description of these programs may be obtained on request to the chair of the department.

■ Special Programs

See Independent Major, International Cooperative Education, and Marine Studies Minor in the Special Programs section, which begins on page 96.

The social sciences are those disciplines that examine human groups and the actions and consequences of individual and collective behaviors. These fields are “social” in that they focus on people and “scientific” in that they base their study on objective analyses of systematically gathered data. Academic departments within the Social Sciences area at Northeastern University are African-American Studies, Economics, History, Human Services, Linguistics, Political Science, Psychology, and Sociology/Anthropology. As diverse as these disciplines are, they are united by the desire to comprehend the underlying regularities and relationships that characterize the social world. In attending to human experience, the social sciences bear a certain relationship to the humanities; in method, they are closer to the natural sciences.

In the College of Arts and Sciences, these are the major disciplines comprising the social sciences.

- African-American Studies, pages 80–81
- Economics, pages 82–83
- History, pages 83–84
- Human Services,* pages 85–86
- Linguistics, pages 87–88
- Political Science, pages 89–90
- Psychology, pages 91–93
- Sociology/Anthropology, pages 93–96

Department of African-American Studies

Associate Professors

Holly M. Carter, Ph.D.

Jordan Gebre-Medhin,

Ph.D.

Assistant Professor

Patrick Manning, Ph.D.

Lecturer

Daniel Nyagani, Ph.D.

Degrees Offered: Bachelor of Arts, Bachelor of Science

African-American Studies aims to develop, among all students, awareness, knowledge, understanding, and appreciation of the culture, traditions, and experiences of African and African-American people—historical and contemporary. Goals of the course include development of study, research, critical-thinking, and writing skills.

By presenting fresh perspectives while remaining firmly grounded in traditional academic standards, the focus of courses in African-American studies is to provide accurate and truthful knowledge of and about African-Americans, the opportunity to gain a meaningful liberal arts education, and a strong basis for professional or graduate work.

Students from other disciplines should find that the courses in African-American studies are designed to complement and enrich their chosen concentrations or majors.

* The human services major is offered jointly by the College of Arts and Sciences and the Boston-Bouvé College of Human Development Professions.

■ Professional Preparation

A major in African-American studies offers students the opportunity to prepare themselves for a wide range of professions calling for an understanding of intergroup relations and the minority experience. Students may go on to graduate study in such areas as social work, psychology, sociology, education, law, business, history, or the humanities.

■ The Major

Students majoring in African-American studies may earn either the bachelor of arts or bachelor of science degree. Both degrees require the following courses:

- Africa Today
- African-American History I
- African-American Literature I
- Black Psychological Identity
- Contemporary Issues in Black Society
- Directed Study for Senior Thesis
- Economic Issues in Minority Communities
- Race Relations in America
- Research Seminar
- Survey of Black Political Movements

Faculty advisers work with students to select electives within their chosen areas of concentration to fulfill their distribution and language requirements for the B.A. degree or career package programs for the B.S. degree.

■ The Minor

A minor in African-American studies is designed to meet the needs of students who major in other areas but have a special interest in African-American studies. To qualify for a minor in African-American studies, a student must earn twenty-eight quarter hours in the field, twelve of which are from the set of major courses listed above. The remaining courses will be a concentration cluster that is arranged in consultation with a faculty adviser.

A concentration cluster is a set of four courses that focus on a given aspect of African-American studies. A cluster might focus on sociology-psychology, history, humanities, human services, research, or other areas related to the student's educational or career needs. Concentration clusters are arranged in consultation between the student and a faculty adviser.

■ Special Programs

See Center for Asian Studies, Independent Major, International Cooperative Education, and Women's Studies Minor in the Special Programs section, which begins on page 96.

Department of Economics

Morris A. Horowitz, Ph.D., *Professor and Chairman*

Professors

Conrad P. Caligaris, Ph.D.
Harold M. Goldstein, Ph.D.
Daryl A. Hellman, Ph.D.
Irwin L. Herrnstadt, Ph.D.
Sungwoo Kim, Ph.D.
Gustav Schachter, Ph.D.
Andrew M. Sum, M.A.

Associate Professors

Neil O. Alper, Ph.D.
Bruce R. Bolnick, Ph.D.
Oscar T. Brookins, Ph.D.
Kamran N. Dadkhah, Ph.D.
Alan W. Dyer, Ph.D.

Barbara M. Fraumeni, Ph.D.

Steven A. Morrison, Ph.D.

Gregory Wassall, Ph.D.

Assistant Professors

M. Shahid Alam, Ph.D.
Gopa Chowdhury-Bose,
Ph.D.
Susan George, M.A.
Jonathan H. Haughton,
Ph.D.
Teh M. Huo, Ph.D.
Manfred W. Keil, Ph.D.
Fred K. Luk, Ph.D.
George A. Plesko, Ph.D.

Lecturers

Gustavo Aristizabal, M.A.
Bruno Berszoner, M.A.
Michelle Casario, M.A.
Shi-Feng Chuang, M.A.
Golam M. Farooque, M.A.
Paul Harrington, M.A.
Mohammad S. Hasan, M.A.
Gerard Kambou, M.A.
Raht Ketusingha, M.A.
M. Mahabub-ul Islam, M.A.
Kamlesh Misra, M.A.
A.S.M. Nurul Islam, M.A.
Neeta Parekh, M.A.
Dene Tin Tun, M.A.
Mark K. Tomass, M.A.

Degrees Offered: Bachelor of Arts, Bachelor of Science

Economics is the study of ways in which scarce resources, including human resources, are deployed to satisfy the material wants of individuals and society. Economists analyze the factors that determine the success or failure of this process.

■ Professional Preparation

The economics program offers students the opportunity to obtain a better understanding of how our economy and other economies function, to prepare themselves for graduate study in economics, and to develop specialties that may qualify them to work as economists.

Macroeconomics, concerned with the overall economy, deals with such problems as inflation; unemployment; growth and instability; and government monetary, fiscal, and regulatory policies. Microeconomics is concerned with the economic behavior of individuals, households, firms, and industries. It seeks to assess the economic effects of racism, sexism, pollution, and environmental damage and analyzes the economic aspects of natural resources, poverty, health, income distribution, trade unions, and collective bargaining.

Graduates may be employed by businesses in such activities as industrial relations, planning and forecasting, determining plant locations, and making financial studies. They may become expert in analyzing consumer demand and developing and marketing new products. They may conduct research, teach, or provide specialized consulting services. In addition, federal, state, and local governments and trade unions are important sources of jobs for economists.

Either a baccalaureate economics degree or graduation with a number of advanced economics courses offers students an excellent opportunity to prepare for graduate programs in economics as well as for entry into schools of law and business.

■ The Major

There is considerable flexibility in the economics program to enable students to concentrate in areas of personal interest. A student expecting to major in the field should take the problem-oriented course Principles of Economics in the freshman or sopho-

more year to discover the range of insights economics can offer in analyzing and solving a variety of problems. Upper-division courses apply theory to an in-depth study of a specific area of the field.

Other courses for the major include two quarters each of fundamentals of mathematics, economic statistics, and economic theory. In addition, the department offers electives in all areas of economics, honors courses, reading courses, and a senior seminar.

The courses listed above are required for either the bachelor of arts or the bachelor of science degree. However, the B.A. follows the liberal arts tradition in its core curriculum and language requirements—the Department of Economics requires social science courses as well, plus six economics electives. The B.S. is a professional degree. In addition to its core curriculum requirements and social science electives, it requires ten economics electives and one course in econometrics or research methods.

The department courses offer training in economic theory, money and banking, public finance, international trade, growth and development, industrial organization, comparative economic systems, economic history, environmental economics, economics of crime, urban problems, labor economics, human resources, economics of transportation, poverty and discrimination, and medical economics. In addition, tool courses, such as statistics, mathematical economics, and econometrics, are available. Other electives and reading courses permit students to study an area in depth.

■ **The Minor**

The department offers a minor consisting of four required courses and four electives, which are selected in consultation with a faculty adviser. Any course taken outside the Department of Economics to satisfy these minor elective requirements must be approved by a faculty adviser in the department.

■ **Special Programs**

See Business German Course, French Course for Business and Economics Students, Independent Major, International Cooperative Education, Irish Studies Program, and Russian Studies Minor in the Special Programs section, which begins on page 96.

Department of History

Raymond H. Robinson, Ph.D., *Professor and Chairman*

<i>Professors</i>	Patrick Manning, Ph.D.	Norbert L. Fullington,
Philip N. Backstrom, Ph.D.	John D. Post, Ph.D.	Ph.D.
Ballard C. Campbell, Ph.D.		Christina Gilmartin, Ph.D.
William M. Fowler, Jr.,	<i>Associate Professors</i>	Clay McShane, Ph.D.
Ph.D.	Charmarie J. Blaisdell,	
Harvey Green, Ph.D.	Ph.D.	<i>Assistant Professors</i>
Donald M. Jacobs, Ph.D.	Laura L. Frader, Ph.D.	Ruth-Ann M. Harris, Ph.D.
		Gerald H. Herman, M.A.

Degrees Offered: Bachelor of Arts, Bachelor of Science

History’s concern with the diverse and complex past of humanity provides an excellent opportunity for the development of greater understanding and appreciation of today’s culture and civilization.

■ **Professional Preparation**

Traditionally, history as a major has appealed to students desiring a broad base before they embark on careers in business, law, journalism, and government.

Other history majors know that they want to work more directly in history. Some want to teach in public schools. They may elect education courses that may lead to state certification. Those desiring jobs in private secondary schools need not be certified by state authorities. Teaching positions in colleges and universities require master's degrees and, increasingly, doctorates. An undergraduate who majors in history facilitates his or her entrance to graduate programs in the field. Ordinarily, college and university history teachers spend part of their time in research and writing.

Not all professional historians teach and write. Many find pleasure and profit working in public archives, private historical societies, museums, and restoration projects. These careers serve not only other professional historians but a larger public as well.

■ The Major

For students of such diverse interests and ambitions, curricula must combine sensible structure with flexibility. History majors at Northeastern may qualify for either a bachelor of arts or a bachelor of science degree. Since the B.A. requires a foreign language, it appeals to prospective candidates for graduate school, where reading knowledge of foreign languages is often necessary; the B.S. is designed for students desiring greater specialization in history and a social science orientation.

Candidates for both degrees are required to take the surveys in Western Civilization and American History and The Historian's Craft, which focuses on methods, problems, and philosophies of historians. A later course, Approaches to History, requires students to undertake a major historical project. Elective courses cover the political, economic, social, and cultural history of humanity in diverse times and places.

To ensure a broad program of study, the College of Arts and Sciences requires that students choose courses offered by departments outside the area of the major.

The history requirements are divided into groups: Group A (ancient, medieval, and early modern Europe); Group B (modern Europe); Group C (British North American colonies and the United States); and Group D (other areas or regions). A minimum of two courses (eight quarter hours) must be elected from each group.

Students are urged to avoid overspecialization at the undergraduate level. Although there are no maximum limits on the amount of history that may be taken, the department advises broad course selection as the best policy. All students who major in history are assigned to departmental advisers who offer counsel about the program. Students are urged to seek advice about history electives, about other electives, and about the Honors Program.

Students who qualify are urged to consider the Honors Program in history. Those accepted write honors theses under the direction of members of the department. Students ordinarily register for honors courses in their last three quarters of enrollment, except for the summer quarter, when honors courses are not usually offered.

■ The Minor

Students interested in a minor in history should consult the Department of History for information.

■ Special Programs

See Center for Asian Studies, Center for the Study of Sport in Society, Independent Major, International Cooperative Education, Irish Studies Program, Russian Studies Minor, and Women's Studies Minor in the Special Programs section, which begins on page 96. See also *New England Quarterly* in the section on journals, page 106.

Human Services

John D. Herzog, Ph.D., *Department of Education, Director and Professor*

<i>Advisory Committee</i>	Lawrence Litwack, Ed.D.,	Lynn M. Waishwell, Ph.D.,
Wilfred E. Holton, Ph.D.,	<i>Counseling Psychology,</i>	<i>Health, Sport, and</i>
<i>Sociology/Anthropology</i>	<i>Rehabilitation, and</i>	<i>Leisure Studies</i>
Louise LaFontaine, Ed.D.,	<i>Special Education</i>	Harold S. Zamansky, Ph.D.,
<i>Counseling Psychology,</i>	Judith A. Moll, M.S.,	<i>Psychology</i>
<i>Rehabilitation, and</i>	<i>Cooperative Education</i>	<i>Fieldwork Supervisor</i>
<i>Special Education</i>	Craig Reinerman, Ph.D.,	Natalie H. Riffin, M.Ed.,
	<i>Sociology/Anthropology</i>	O.T.R.
	Barbara Schram, Ed.D.,	
	<i>Education</i>	

Degree Offered: Bachelor of Arts

Human services is an interdisciplinary major involving the College of Arts and Sciences and the Boston-Bouv  College of Human Development Professions.

■ Professional Preparation

This major offers students a program of preparation for careers in one of the areas broadly defined as “the helping professions.” The program is interdisciplinary. The human services curriculum affords students the opportunity to acquire fundamental attitudes, knowledge, and skills that may lead to meaningful careers as well as to graduate education in numerous human services specializations.

Students who major in human services through the College of Arts and Sciences prepare for jobs in both public and private agencies. Through course work, two quarters of fieldwork experience, and co-op jobs (optional), they have the opportunity to explore such areas as casework in social service and welfare agencies; therapeutic treatment programs in mental health settings; serving deaf clients through the use of American Sign Language; supportive counseling in community health centers; rehabilitation counseling; assisting individuals in sheltered workshops; parole counseling; court liaison in programs for delinquent youth; staff work in halfway houses, penal institutions, and drug treatment centers; supportive counseling for the mentally retarded; community organizing; services for the aging; administration in human services agencies; and research and evaluation of social programs.

■ College Requirements

The overall requirements for each participating college differ in certain respects. Refer to pages 53–55 for college requirements in Arts and Sciences and to page 111 for college requirements in Boston-Bouv . Students in Arts and Sciences may take either a five-year cooperative education program or a four-year full-time program.

■ The Major

The Human Services Program offers an extensive advisory system to help students make the best use of course opportunities and to guide them in the choice of specializations within the major and in career planning.

There are five basic aspects to the program, as follows:

- Prerequisite courses: A total of six courses is required in sociology, psychology, government, economics, and human services.

- **Core courses:** Nine courses are required in areas including statistics, research methods, group process, organizations, personality, intervention strategies, and a senior seminar.
- **Social and community issues:** Three courses in the areas of African-American studies, special education, poverty, or social problems must be selected from a list of recommended options.
- **Specialization:** Each student must take a five-course specialization developed in conjunction with an adviser in a subfield of human services of special interest to the student. Typically, these specializations are in administration, community services, and clinical work. Structured specializations have been developed in deaf studies, aging, administration, business, speech and hearing therapy, and other areas. Specific course choices are designed to complement the individual's interests and goals.
- **Fieldwork:** Human services students are required to fulfill two fieldwork placements during the last two years of their program. Students must apply for fieldwork assignments early in the quarter *before* the quarter in which the proposed fieldwork is to be done. Each placement consists of 150 hours on site. The type of placement varies according to the student's interest. In the past, students have found placements in community programs, nursing homes, vocational workshops, state and federal agencies, and recreational facilities. These experiences are supervised by University and agency staff to maximize the student's learning opportunity.

Human services students at Northeastern have been very active in their major and helpful to each other. The Human Services Student Organization combines social and career-related activities, which in the past have included open houses, bake sales, clothing drives, meals for the homeless, social activities, day-long conferences, and weekend retreats. A quarterly *Human Services Newsletter* is published by students and faculty.

In addition, human services students and faculty are leaders in the Fenway Project, a campus office that recruits, places, and supports student volunteers in social, educational, and recreational agencies in Northeastern's immediate neighborhood. In recent years, Fenway Project volunteers have worked with senior citizens who reside in apartment buildings for the elderly, school-aged children from a public housing project, patients and staff from a nearby health clinic, and many other groups. The year culminates in a spring festival in the Fenway, attended by students and permanent residents of the area. The Fenway Project has been administered by the Human Services Program since the summer of 1986.

For further information on degree requirements, students should consult their human services adviser or the Program Director at 210 Lake Hall, or telephone 617-437-2624.

■ **The Minor**

No minor is offered.

■ **Special Programs**

See American Sign Language Programs, Business Minor, Elementary Spanish Course for Criminal Justice and Human Services Majors, Independent Major, International Cooperative Education, Irish Studies Program, and Women's Studies Minor in the Special Programs section, which begins on page 96.

Linguistics

<i>Professors</i>	<i>Associate Professors</i>	<i>Assistant Professor</i>
Irene R. Fairley, Ph.D., <i>English</i>	John N. Frampton, Ph.D., <i>Mathematics</i>	Nancy N. Soja, Ph.D., <i>Psychology</i>
Harlan Lane, Ph.D., Doc. ès Lettres, <i>Psychology</i>	Michael R. Lipton, Ph.D., <i>Philosophy and Religion</i>	<i>Instructor</i> Anthony P. Esposito, M.A., <i>Modern Languages</i>
Joanne L. Miller, Ph.D., <i>Psychology</i>	Janet H. Randall, Ph.D., <i>English</i>	

Degrees Offered: Bachelor of Arts, Bachelor of Science

Linguistics is the science of language and is concerned with such issues as how children learn to speak, how we understand and produce language, how language barriers keep people apart and how language ties bring them together, how language is structured and how it is represented in the mind, why some people are better at acquiring a second language than others, and how sign languages are different from spoken languages.

■ **Professional Preparation**

Combined with other appropriate courses, a major in linguistics may be a useful first step in becoming, for instance, a linguist, an expert on child language, an interpreter, or even an expert in the production and comprehension of language by computers. Above all, specializing in linguistics allows the student an opportunity to have an insight into language itself—a fundamental component of the human cognitive system.

■ **The Major**

Linguistics is an interdepartmental major. Six departments (English, Modern Languages, Philosophy and Religion, Psychology, Sociology/Anthropology, and Mathematics) collaborate to offer a comprehensive program that makes use of the vast resources and talent that exist at Northeastern University in the field of linguistics. The major reflects the current research of such diverse people as linguists, sociologists, psychologists, language educators, and teachers of second languages. It is administered by a coordinator who is a member of a collaborating department and the linguistics faculty.

The major offers students a systematic introduction to modern linguistics and is broad enough to meet the needs of students interested in:

- General linguistics (phonetics and phonology, semantics, syntax, bilingualism, historical linguistics, philosophy of language, language and culture, American Sign Language);
- Experimental linguistics (language and cognition, child language, neurolinguistics, psycholinguistics);
- Linguistics applied to language-related work (language teaching, language testing, language teaching materials, interpreting, literary analysis).

Linguistics majors can obtain either a bachelor of arts or a bachelor of science degree. These two degrees are in every way identical except that the second language requirement can be met with American Sign Language for the B.S. degree but not for the B.A. degree.

Besides the general college requirements, the requirements of the major include six basic courses from the main areas of linguistics: general linguistics, psycholinguistics, sociolinguistics, and symbolic logic. Students also take five additional courses in the area of their choice. These courses include, among others, Child Language, Philosophy of Language, Neurolinguistics, Syntax, Nonverbal Communication, Animal Communication, Introduction to Semantics, and Applied Linguistics.

All students also take a laboratory course in which they are introduced to language research in a laboratory environment. Two advanced seminars are required, as is a practicum that can take the form of fieldwork, interpreting, language teaching, or a directed study. The practicum is supervised by a faculty member who advises the student and monitors his or her progress. The requirement for advanced knowledge of a second language—spoken or sign—may be met by either taking appropriate courses or demonstrating proficiency in that language.

Combined with other appropriate courses, the program is suitable for students interested in teaching American Sign Language. They may wish to concentrate on the applied linguistics of sign language while working on their bachelor's degree. This concentration enables students to acquire the background and the skills necessary to become professional teachers of sign language and helps them prepare for sign language instructor certification.

Throughout the course of study, students meet regularly with an adviser who helps them plan their course work and advises them on all aspects of the major.

■ **The Minor**

The linguistics program offers students specializing in other disciplines a minor in linguistics. This minor is designed to give students the opportunity to broaden their field of study and to enhance their career opportunities. The minor consists of six courses, two required courses with the remainder selected from a large set of courses offered by the program. Students minoring in linguistics are assigned a faculty adviser to help them select the courses that best suit their needs.

■ **Research**

The students enrolled in a directed-study course and in the laboratory course take advantage of the Department of Psychology's four language laboratories, which contain audio and video recording facilities and computers for stimulus preparation, data gathering, and statistical analysis. They work with graduate students, research assistants, and faculty on ongoing projects related to the perception and production of spoken and sign languages.

■ **Special Programs**

See American Sign Language Programs and International Cooperative Education in the Special Programs section, which begins on page 96. See also The Minor in the English section, page 63; The Minor in the Psychology section, page 92; and the Computer Science section, page 151.

Special Note A brochure describing the linguistics major and minor and offering additional information can be obtained from any of the Linguistics faculty members.

Department of Political Science

Robert E. Gilbert, Ph.D., *Professor and Chairman*

<i>Professors</i>	<i>Visiting Associate Professor</i>	William F. S. Miles, Ph.D.
Robert L. Cord, Ph.D.		Margaret A. Paternek, Ph.D.
Suzanne P. Ogden, Ph.D.	Morris A. Shepard, Ph.D.	
David E. Schmitt, Ph.D.	<i>Assistant Professors</i>	Jonathan H. Portz, Ph.D.
<i>Associate Professors</i>	Denise L. Baer, Ph.D.	John F. L. Ross, Ph.D.
L. Gerald Bursey, Ph.D.	Christopher J. Bosso, Ph.D.	Denis J. Sullivan, Ph.D.
Minton F. Goldman, Ph.D.	David A. Dickson, Ph.D.	Michael C. Tolley, Ph.D.
Eileen L. McDonagh, Ph.D.	Duane L. Grimes, M.A.	
David A. Rochefort, Ph.D.	William D. Kay, Ph.D.	

Degrees Offered: Bachelor of Arts, Bachelor of Science, Bachelor of Science with a concentration in public administration, Bachelor of Arts and Bachelor of Science with a concentration in law and legal issues

Political science is concerned with the study of political institutions, the social and economic forces that shape them, the cultural context within which they operate, and human behavior in political matters. The Department of Political Science at Northeastern University has three objectives:

- To offer students the opportunity to obtain an education within the framework of the best liberal arts tradition;
- To help heighten students' awareness of political forces in the environment and to sharpen their perception of their role as citizens in a democratic society;
- To provide the opportunity for acquiring a solid academic foundation to those who elect political science, law, or public administration as a professional career or who choose a career for which a political science background is relevant or helpful.

■ Professional Preparation

The study of political science can be the gateway to a liberal education with its benefits of broadened interests, sharpened sensibilities, and a quickened sense of civic responsibility.

Studies in this field can help the student with a special interest in public affairs to prepare for government service; the study of law; the teaching of government and related subjects; a career in politics, public affairs, or public management; or a career in such areas as journalism or international affairs.

For the student who wishes to pursue professional studies at the graduate level, concentration in political science, public administration, and/or law and legal issues may help lead to many attractive opportunities. In political science, as in many fields, competition for positions is keen, so the student's success will depend on such factors as academic record, experience, and personal initiative. There are some career opportunities in public management at the federal, state, and local levels of government, while positions in research are often available in government, university, and independent research bureaus. Law and teaching offer further career possibilities, as do specialized agencies in international bodies, such as the United Nations, which call for the skills of the political scientist. Individuals with specialized training in political science can compete for positions in less obvious areas: in the public-service programming of educational and commercial television, in journalism, in legislative and lobbying work, in public relations activities with private associations, and in profit and nonprofit corporations.

■ The Major

Students may select either the bachelor of arts or the bachelor of science degree program in political science. Students in the B.A. program have to meet foreign language and other requirements of the college. In addition, the degree programs require twenty-four to twenty-eight quarter hours of electives in political science and six electives (twenty-four quarter hours) in the social sciences. The social science electives must include one course each in three of the following: African-American studies, anthropology, economics, history, psychology, or sociology. The B.S. student is required to take eight quarter hours of research methods. Courses in basic math, FORTRAN, and FORGO are also recommended for B.S. students. The remaining three electives may be selected from any of the social science areas.

Public Administration Concentration The B.S. program with a concentration in public administration provides a third option for the student. This program requires the completion of forty hours of such courses as Introductory Political Science, American Government, Public Administration, Policy Analysis, Public Personnel Administration, Public Budgeting, Organizational Theory, and other courses relevant to the field. Students must also complete at least sixteen quarter hours of public administration electives.

In addition, they must complete twenty-four quarter hours of electives in the social sciences, at least eight of which should be in economics. Interested students may undertake, for academic credit, a directed-study project based on an internship experience in a government agency.

Law and Legal Issues Concentration Students in both the B.A. and B.S. programs may choose to concentrate in law and legal issues. This option requires the completion of Introductory Political Science, American Government, Public Administration, and Political Theory as well as six electives relevant to law and legal issues, such as Constitutional Law, Civil Liberties, Law and Personal Morality, and International Law. Students in this concentration must also take a limited number of additional political science courses as well as six electives in the social sciences. For students in the B.S. program, two research methods courses are required.

■ The Minors

A minor in political science is available to interested students. It entails successfully completing seven political science courses, at least two of which must be from among the following: Introduction to Politics, Introduction to American Government, Introduction to International Relations, Introduction to Foreign Governments, or Public Administration.

A minor in international politics is also available. It requires successful completion of seven courses in international and/or comparative politics, including Introduction to International Relations and Introduction to Foreign Governments and Societies.

■ Special Programs

See Center for Asian Studies, Independent Major, International Cooperative Education, Irish Studies Program, Russian Studies Minor, and Women's Studies Minor in the Special Programs section, which begins on page 96.

Department of Psychology

James R. Stellar, Ph.D., *Associate Professor and Acting Chairman*

Professors

Stephen G. Harkins, Ph.D.
Leon J. Kamin, Ph.D.
Harlan L. Lane, Ph.D.,
Doc. ès Lettres
Joanne Miller, Ph.D.
Bertram Scharf, Ph.D.
Alexander A. Skavenski,
Ph.D.
Harold S. Zamansky, Ph.D.

Associate Professors

Edward A. Arees, Ph.D.
Martin L. Block, Ph.D.
Roger Brightbill, Ph.D.
Perrin S. Cohen, Ph.D.
Judith A. Hall, Ph.D.
Charles Karis, Ph.D.
Harry Mackay, Ph.D.
Adam Reeves, Ph.D.

Adjunct Associate Professor

Lawrence Stoddard, Ph.D.

Assistant Professors

Jane A. Bybee, Ph.D.
Julie K. Norem, Ph.D.
Nancy N. Soja, Ph.D.

Clinical Associate Professor

Karen Gould, Ph.D.

Degrees Offered: Bachelor of Arts, Bachelor of Science

The science of psychology may be broadly defined as enquiry into the reasons why people and animals behave as they do. Psychology is an interdisciplinary science that depends heavily on the methods and much of the knowledge derived from the other natural and social sciences.

The psychology curriculum explores such topics as the function of the brain in determining behavior; how we see, hear, and learn; what behavioral science can offer in the problem areas of mental retardation, abnormal personality, infancy, and old age; and how we might suggest social changes based on laboratory data to increase men's and women's accomplishments and satisfaction in the modern world. The curriculum offers opportunities for laboratory practice and experimentation, field experiences in behavior technology, and small-group seminars to encourage critical and creative evaluation of psychology's accomplishments and its future.

■ Professional Preparation

The undergraduate curriculum offers students the opportunity to develop a sound foundation in the scientific underpinnings of modern psychology to prepare them for a diversity of careers in teaching, research, public service, and professional practice. It also helps students prepare to enter a variety of work settings in which in-service specialty training is ordinarily offered (for example, community mental health centers, vocational rehabilitation offices, and correctional programs) or to enter advanced training in such graduate programs as psychology, life science, or any of the health professions and medical specialties.

■ The Major

The department offers both a bachelor of arts and a bachelor of science degree. The B.S. degree is usually recommended for students with a strong scientific or professional interest who may consider applying to graduate schools in psychology or environmental science. The department also offers a special B.S. program for psychology majors who wish to prepare for application to health professions schools. Since modern psychology is multidisciplinary, the B.A. and B.S. programs both include distribution requirements in allied sciences to fulfill the need for wide exposure to varying techniques of scientific practice and interpretation.

With the science courses and elementary psychology courses as foundations, students in the B.A. and B.S. programs may pursue a general course of study that covers major areas of psychology, such as language and cognition, learning motivation and behavioral analysis, personality and social psychology, or sensory and neuropsychology. Alternately, students may choose to concentrate in one area, taking courses in related disciplines. For example, a student concentrating in personality and social psychology may, by petition, take courses in sociology, anthropology, and speech/drama. The student's final choice of concentration should be made only after personal consultation with his or her psychology department adviser.

Regardless of the concentration within psychology, the student is expected to progress through a sequence of specialty courses, laboratory courses, and a seminar. The student is thus afforded the opportunity to explore a given area of psychology in depth, as well as to acquire an overview of the broader issues in psychology. Furthermore, all students may participate in the department's Directed Studies Program. In this program, under the direction of a faculty member, they engage in research projects in various laboratories, where the student learns by doing.

■ **The Minor**

Each student is required to take ten psychology courses, including the introductory psychology and statistics sequence, intermediate specialty courses, and at least one laboratory course. The minor program itself is quite flexible, designed for students with a broad range of interests and career goals. Students may choose either to distribute the ten psychology courses over a broad range of areas or to focus on one of the areas of major concentration as discussed above. Students who are interested in the minor program should meet with faculty advisers in the department to help them select the minor program that best suits their needs.

■ **Honors Program**

All psychology majors who are academically eligible to participate in the Honors Program are encouraged to do so. See pages 16–17 for details about this program for highly motivated and successful students.

■ **Research Laboratories**

The student who enrolls in laboratory courses and directed-study courses will take advantage of the department's resources for research, which include: in the field of learning and motivation, behavior laboratories for research with humans and animals; and, in collaboration with the Walter E. Fernald State School, an instructional setting for research and training in behavior modification with retarded children and adults; in neuropsychology and ethology, neuroanatomical, neuropharmacological, and histological laboratories; in the psychology of vision and hearing, specialized enclosures and equipment for presenting visual and auditory stimuli and for measuring responses of the eye and the ear, including online computers; in language and cognition, audio and video recording facilities and a computer for control of stimulus and response variables; and in the field of personality, darkrooms, tachistoscopes, and an eye-movement camera.

■ **Special Programs**

See American Sign Language Programs, Center for the Study of Sport in Society, Combined Program with Professional Schools, Independent Major, International Cooperative Education, and Women's Studies Minor in the Special Programs section, which begins on page 96. See also The Minor in the Linguistics section, page 88.

Additional information regarding degree requirements, laboratory research opportu-

nities, special academic programs, and career opportunities for psychology majors is available through the Department of Psychology at 125 Nightingale Hall, or by telephoning 617-437-4702.

Department of Sociology/Anthropology

M. Patricia Golden, Ph.D., *Associate Professor and Chairperson*

Professors

Morris Freilich, Ph.D.
Debra R. Kaufman, Ph.D.
Elliott A. Krause, Ph.D.
Jack Levin, Ph.D.
Morton Rubin, Ph.D.,
Emeritus
Earl Rubington, Ph.D.

Associate Professors

Arnold Arluke, Ph.D.
Richard Bourne, Ph.D.
Winifred Breines, Ph.D.
Christine Gailey, Ph.D.
Wilfred E. Holton, Ph.D.
Alan M. Klein, Ph.D.
Thomas H. Koenig, Ph.D.
Ronald J. McAllister, Ph.D.
Carol A. Owen, Ph.D.
Judith Perrolle, Ph.D.
Thomas M. Shapiro, Ph.D.

Assistant Professors

Michael Blim, Ph.D.
Daniel R. Faber, Ph.D.
Luis M. Falcone, Ph.D.
Herman S. Gray, Ph.D.
Anthony T. Jones, Ph.D.
Maureen Kelleher, Ph.D.
Lynn Stephen, Ph.D.

Degrees Offered: Bachelor of Arts, Bachelor of Science

The disciplines of sociology and anthropology apply a critical perspective to the study of the social arrangements in which human beings live and die. Systematic research methods and theory are brought to bear on how societies function and change and on how individuals, groups, and institutions interact. Such areas as social policy, social change, criminology, medical and mental health issues, and business issues are studied.

■ Professional Preparation

A major in this department offers background preparation and preprofessional training for a wide spectrum of careers in public or private service and research. Students may wish to pursue graduate study in sociology, anthropology, or social psychology. For those pursuing graduate professional training (for example, law, social work, or public administration), sociology and anthropology provide a good base.

Sociology and anthropology courses can offer a useful background for those enrolled in premedical, prelegal, paramedical, or other preprofessional programs.

■ The Majors

Students may major in sociology or anthropology or both. Students who wish to study both must design their own programs, with the help of an adviser.

Students may follow either a four-year full-time program or a five-year cooperative course of study. Cooperative work assignments vary from placement in mental hospitals and social agencies to placement in university, government, and other research and policy-making settings. Transfer between the five-year co-op program and the four-year full-time program is possible, and registration in either is not an irreversible decision.

The department offers both a B.A. and a B.S. degree. The requirements for each degree, both in sociology and in anthropology, are outlined below. A student with specific goals may, of course, take more departmental electives than are required. B.A. students may wish to look at the specialization requirements for B.S. students and consult their advisers for assistance in planning programs with specialized goals.

The department offers a B.S. with majors in anthropology or sociology. Students

selecting this option must fulfill all the major requirements set by the department for the B.A. degree and must take a coherent program involving additional course work as outlined below. Specializations are interdisciplinary and involve more intensive study within a concentration.

Anthropology B.A. students in anthropology must take at least forty-eight quarter hours in departmental courses, including forty in anthropology and eight in sociology. The exact distribution can be arranged. Minimum requirements are as follows:

- Preparatory: Peoples and Cultures and Introduction to Sociology. (Students with equivalent background who intend to major in anthropology may be exempted. Students should consult a departmental adviser.)
- Core requirements: At least three of the following, as available: Language and Culture; Individual and Culture; Human Origins; Myth and Religion; Sex, Sex Roles, and Family; and Archaeology.
- Electives: Students must take at least six additional electives in anthropology and at least one additional elective in sociology. Qualified students are encouraged to take relevant graduate courses with the consent of the instructor. Students majoring in anthropology should freely consult their advisers since courses elsewhere in the University may round out a special interest or focus.
- Nondepartmental requirements: Six courses from the following social sciences: African-American studies, economics, history, political science, and psychology.

B.S. students in anthropology take the same basic core of courses and select an individually designed specialization in an area of interest consisting of at least five courses. Students *must* confer with an adviser who will help develop such a program, place it on record, and supervise it. Interdepartmental and interdisciplinary specializations can be arranged in such areas as linguistics, Native American studies, biological anthropology, psychological anthropology, or area studies focusing on Latin America, Africa, Asia, or the Middle East.

Sociology B.A. students in sociology must take at least fifty-two quarter hours in departmental courses, including forty-four in sociology and eight in anthropology, and must meet the following minimum requirements:

- Preparatory: Peoples and Cultures and Introduction to Sociology. (Students with equivalent background who intend to major in sociology may be exempted. Students must check with a departmental adviser.)
- Core requirements: Statistical Analysis; Research Methods I; Research Methods II; Classical Social Thought; Current Social Thought; Class, Power, and Social Change.
- Electives: The following are minimum requirements: two intermediate courses (at the 1100/1200 level, excluding Introduction to Sociology); two advanced courses (courses at the 1300 level or above); and one intermediate or advanced anthropology course. With the adviser's consent, qualified students are encouraged to take certain graduate and directed-study courses and/or the Senior Majors Seminar.
- Nondepartmental requirements: Six courses from the following social sciences: African-American studies, economics, history, political science, and psychology.

B.S. students in sociology take the same basic core of courses as B.A. students and, in addition, select an individually designed specialization in an area of interest consisting of at least six courses, some from within and some from offerings outside the department. Students *must* confer with an adviser who will help develop such a program, place it on record, and supervise it. It is possible to arrange specializations focusing on social welfare, health services, political studies, urban studies, education and society, ethnic studies, and organizational studies.

The following are examples of the many other areas of specialization offered (Department of Sociology/Anthropology courses are indicated by an asterisk):

Social Welfare

Human Services Research and Evaluation*
Income Inequalities and Discrimination
Social Policy and Social Intervention*
Sociology of Human Service Organizations*
Sociology of Poverty*
The Sociology of Private and Public Assistance*
The Welfare System in America

Health Services

Aging and Society*
Community Medicine and Health-Care Delivery
Death and Dying*
Food and Hunger*
Health Care as a Social Issue*
Medical Economics
Medical Sociology*
Medicine, Religion, and the Healer's Art
Women, Health, and Social Change*

Urban Studies

American Urban History
Architecture and the City
Cities and Society*
People in Cities*
Population and Society*
Sociology of Boston*
Urban Economics
Urban Politics

Law and Society

Anthropology of Law and Conflict*
Class, Crime, and the Police*
The Economics of Crime
Law, Crime, and Social Justice*
The Politics of the Criminal Justice System
Social Policy and Social Intervention*
Sociological Theories of Crime*

Occupations and Professions

History of the Professions
Labor Market Economics
Medical Sociology*
Occupations and Professions*
Social Roles in the Business World*
Sociology of Work*
Technology and Careers of the Future*

Gender Roles and Family

The Black Family
Feminist Perspectives on Society*
Sex-Gender Roles in a Changing Society*
Sex Roles in American Politics*
Sex, Sex Roles, and Family*
Sociology of the Family*
Violence in the Family*
Women Working*

Organizational Studies

Administration and Formal Organization
Consumerism and Consumer Behavior*
Human Services Organization*
Organization and Bureaucracy*
Social Policy and Social Intervention*
Social Roles in the Business World*
Sociology of Business and Industry*
Sociology of Work*

Deviance and Social Control

Alcohol Use and Social Control*
Drugs and Society*
The Female Offender
Juvenile Delinquency*
Social Deviance*
Sociological Theories of Crime*
Sociology of Alcoholism*
Sociology of Drinking*
Sociology of Prejudice*

Social Psychology

Culture and Mental Illness*
Group Behavior I, II
Personality
Psychology Laboratory–Social Psychology
Social Psychology*
Sociology of Prejudice*
War and Aggression*

Popular Culture and Mass Communication

Camera and Culture*
Collective Behavior*
Language and Culture*
Mass Communication*
Musical Culture
Popular Culture*
Sociology of the Arts*
Sport in Society*
Survey of African-American Music

Environment and Technology

Computers and Society*
Environment and Society*
History of Science and Technology
Music and Technology
Science and Society*
Science, Technology, and Public Policy
Technology and Careers of the Future*
Technology and Society*
Technology of Human Values

* Departmental course

■ The Minors

Anthropology In addition to its major program, the department offers students majoring in other disciplines the opportunity to take a minor in anthropology. The minor program consists of the following:

- Peoples and Cultures
- Language and Culture
Individual and Culture
Sex, Sex Roles, and Family
- Any two-course specialization in anthropology arranged between the student and the adviser.

For other minors, see the Special Programs section below.

Sociology In addition to its major program, the department offers students majoring in other disciplines the opportunity to take a minor in sociology. It is sometimes possible to substitute a course from another department for one of the requirements. The minor program consists of the following:

- Introduction to Sociology
- Two courses from among
Research Methods I
Research Methods II (prerequisite Research Methods I)
Classical Social Thought
Current Social Thought
- Any three-course specialization in sociology arranged between the student and the adviser.
- One additional sociology course (SOC 1300- or SOC 1400-level).

■ Special Programs

See Center for Asian Studies, International Cooperative Education, Russian Studies Minor, and Women's Studies Minor in the Special Programs section below.

Special Programs in the College of Arts and Sciences

Reflecting the awareness that ideas, fields of study, and interests do not always fall into traditional, neatly compartmentalized units, the College of Arts and Sciences makes a wide variety of special programs available to its students. Field-study programs, international work-study opportunities, interdisciplinary majors and minors, involvement with professionals—all are among the options available to students who meet the program eligibility requirements. Students who participate in these programs find their educational experience at Northeastern greatly enhanced. Detailed information about these programs is available from involved departments and the Office of the Dean.

Availability of all special programs is contingent on minimum enrollment requirements and, when an outside institution is involved, continued affiliation of that institution with the University.

■ The Minors

The College of Arts and Sciences offers to all upperclass students in the college, as well as to students in other colleges in the University, several choices of minor. Descriptions of those that are offered through single departments are found in the section of this publication describing the relevant department; descriptions of interdisciplinary minors, those indicated with an asterisk, are found above.

The following minors are offered by the College of Arts and Sciences:

African-American Studies	Media Studies*
Anthropology	Modern Language
Art	(options in French, German, Italian, Russian, and Spanish)
Asian Studies*	Music
Biology	Philosophy
Business (in conjunction with the College of Business Administration)*	Physics (and Instrumentation for Science)
Chemistry	Political Science (and International Politics)
Economics	Psychology
English	Russian Studies*
(options in Literature, Expository and Creative Writing, and Technical Communication)	Secondary Education (offered by Boston- Bouvé College)
Film Studies*	Sociology
Geology	Speech Communication
History	Technical Communication*
Linguistics*	Theatre
Marine Studies*	Urban Studies
	Women's Studies*

■ Study Abroad Programs

A series of overseas study programs is currently under development by the College of Arts and Sciences. Qualified middlers, juniors, and seniors with a cumulative quality-point average of 3.0 or higher are eligible. These are the current offerings:

Ireland: North and South Through collaborative arrangements with the Institute of Public Administration in Dublin, Ireland, and the Queen's University of Belfast, Northern Ireland, qualified Northeastern University students attend classes during the fall quarter in Dublin, where they also intern with members of the lower house of the Irish parliament (the Dail). At the completion of the quarter, students move to Northern Ireland, where they attend winter-term classes at the Queen's University of Belfast. A total of thirty-two credits may be earned for successful completion of this unique program.

Additional Programs Programs with features and opportunities similar to those of the Ireland program are being developed. Students interested in such programs should contact the Office of International Study Programs, 437 Meserve Hall, Northeastern University, 360 Huntington Avenue, Boston, MA 02115; telephone 617-437-5162.

■ American Sign Language Programs

The Northeastern University Sign Language Program, affiliated with the Department of Modern Languages, offers both day and evening courses in American Sign Language (ASL) conversation and interpretation. Courses in the structure of ASL, deaf culture, deaf history, ASL literature and ASL linguistics, and sign language teaching are also among the programs offered. The content of the conversation courses is designed to include features typically found in second-language curricula: vocabulary, grammatical structure, and the culture of the target language group. A segment of each course provides an opportunity for students to interact directly with deaf people, observe ASL in use, and practice their signing skills. The program also makes use of instructional media for individualized practice on receptive skills and vocabulary review. ASL courses provide a source of enrichment and enhanced career development for students who choose ASL as an elective.

Related Degree Programs American Sign Language courses are an integral part of two undergraduate degree programs: the B.A. in human services with a specialization in deaf studies and the B.A. and B.S. degrees in linguistics. A combination of course work

*Departmental course

from the ASL and human services programs, the deaf studies specialization within the Human Services Program addresses an increasing need for human services professionals with skills and knowledge of American Sign Language and the deaf community. Students interested in working with deaf people in a variety of situations may consider a B.A. degree in this area. See also the Human Services section on page 125.

The linguistics major is a comprehensive introduction to the study of language reflecting the research of linguists, sociologists, psychologists, language educators, and teachers of second languages. The major offers the special opportunity to work toward a B.S. degree focusing on American Sign Language or applied areas of ASL linguistics. See also the Linguistics section, page 87.

Interpreter Education Project Northeastern University is one of ten grantees awarded a five-year grant from the U.S. Department of Education, Rehabilitation Services Administration, for the purpose of developing and coordinating interpreter training activities to serve Connecticut, Massachusetts, New Jersey, and New York, and to develop on-campus programs at Northeastern University. Among the project's goals are to design and propose a five-year bachelor's degree in sign language interpreting at Northeastern University, coordinate and provide short-term interpreter training opportunities, and design and pilot a six-month interpreter apprenticeship for newly trained interpreters.

Sign Language Teacher Training Program As the New England regional training program under the National Association of the Deaf National Consortium of Programs for the Training of Sign Language Instructors, Northeastern University offers programs to train teachers of ASL. The Summer Program for the Training of Sign Language Instructors offers an intensive introduction to the professional teaching of ASL as a second language. It is designed for current and prospective teachers already fluent in ASL.

Visiting Students Program Northeastern also offers programs at both the undergraduate and graduate levels for students who wish to visit the University and become involved in an intensive exposure to ASL linguistics. These students have the opportunity to take courses in linguistics and ASL, as well as to participate in directed studies through which they may take part in ongoing ASL research projects in the Language and Cognition Laboratory of the Department of Psychology.

■ **Business German Course**

This course, taught in English, is designed for students of business and economics seeking to develop competence in the reading and understanding of texts produced by the German business community and trade media. Course goals include:

- Development of a working knowledge of grammatical structures and terminologies used in business writings;
 - Development of effective comprehension procedures used by professionals for efficient reading;
 - Introduction to the Federal Republic of Germany, its industrial geography, trade relations with the United States, and role as a leading partner in international commerce.
- Readings from English-language trade publications assure a steady influx of outside information and serve as the basis for weekly summary assignments designed to upgrade students' writing skills.

Students may use this course as a prerequisite to the conversation-based German offerings if speaking competence is needed for a business-oriented co-op in Germany as part of Northeastern's exchange program (see International Cooperative Education, pages 28 and 101). Additional information may be obtained from Professor Ross Hall in the Department of Modern Languages, 360 Holmes Hall, at 617-437-4324.

■ Business Minor

The College of Business Administration (CBA), in collaboration with the College of Arts and Sciences, offers a minor in business for all students outside the College of Business Administration. This minor may be valuable to students seeking jobs both before and after graduation in either the public or the private sector.

The courses in the minor cover substantially the areas of business required by the American Assembly of Collegiate Schools of Business as part of the relevant “common body of knowledge.”

The business courses included are the same (with one exception, accounting) as those taken by all students in the College of Business Administration. Thus, the minor encourages a cross-fertilization of ideas beneficial to both CBA and non-CBA students.

For details, including full requirements and program admission standards, interested persons should consult the Office of Undergraduate Programs of the College of Business Administration.

■ Center for Asian Studies

The Center for Asian Studies was established to encourage, develop, and promote teaching and research on Asian life, and to promote the educational and cultural exchange of students and scholars. The center develops and supports multidisciplinary academic programs, courses, and research that focus on individual Asian countries, the region as a whole, or specific issues applicable to Asian life such as Asian political processes or family life in Japan. The center's goals are to foster a deeper understanding of Asian societies and cultures through support for scholarly research, faculty, and visiting scholars; coordination of graduate and undergraduate courses to develop academic and professional interest; and acquisition, publication, and dissemination of research findings on topics selected to advance scholarship and knowledge about Asia.

The center also encourages and sponsors seminars, symposia, and conferences on related issues. The director of this center also coordinates the Asian Studies Minor, which draws together studies in the Departments of Art, History, Modern Languages, Philosophy and Religion, Political Science, and Sociology/Anthropology. Among courses offered are history, language, philosophy and religion, political science, sociology, and anthropology.

■ Center for the Humanities

The Center for the Humanities at Northeastern University supports teaching and research activities in cross-disciplinary areas that connect the traditional humanities with science and mathematics and with such professional curricula as engineering, business, criminal justice, and allied health. Although it offers no courses, the center promotes the application of human-values perspectives and problem-solving techniques to the professions in various conferences, workshops, and presentations.

■ Combined Program with Professional Schools

Under this program, a preprofessional student may reduce by one year the time normally required for obtaining both the undergraduate and professional degrees. Students who have completed at least three-fourths of the work required for a baccalaureate degree in the College of Arts and Sciences and who are accepted into an approved professional school of dentistry, law, medicine, optometry, osteopathy, or veterinary medicine will be eligible for the B.A. or B.S. degree at the end of their second year in a professional school. At least two-thirds of the work for the baccalaureate degree must be earned in residence at Northeastern, and all other College of Arts and Sciences requirements must be fulfilled, the residence requirement having been completed prior to entrance into the professional school.

■ **East/West Marine Biology Program**

The East/West Marine Biology Program, a joint project of Northeastern University and the University of Oregon, allows advanced undergraduate and beginning graduate students in biology and related areas to spend a year of field study in three diverse marine environments: coastal Oregon, Jamaica, and New England. The program is open to Northeastern University and University of Oregon students, and also to students from other colleges and universities.

The program begins in the fall on the coast of Oregon, noted for its giant kelp, diverse marine invertebrates, fish, birds, and marine mammals. While living at the Oregon Institute of Marine Biology, students study invertebrate zoology, marine birds and mammals, marine ecology, and coastal biology—subjects that offer a foundation for the tropical and East Coast marine biology courses that follow. Credit is given for independent research projects in any or all of the three quarters.

In January, students travel to Jamaica to study tropical biology at the Discovery Bay Marine Laboratory on the island's north coast. The laboratory is located on the shore, within walking and swimming distances of rich coral reefs and sandy bays interspersed with beds of turtle grass. Course work focuses on the tropical environment while building on the comparative aspects of field biology. Field trips to the misty montane forests, lectures on the island's terrestrial ecology, and the experience of Jamaican culture are important parts of the program.

Students who have lived and worked together in Oregon and Jamaica travel to Northeastern University for the final phase of the program. There, they live in University or private housing near the Marine Science Center at East Point, Nahant, just north of Boston. The laboratory is located on several acres of open land at the end of a rocky point extending into the Atlantic Ocean. During spring quarter, courses focus on the marine plants and animals of New England while emphasizing advanced and comparative aspects of marine biology, benthic ecology, and the behavior of marine animals.

■ **Elementary Spanish Course for Criminal Justice or Human Services Majors**

This course is intended for students majoring in criminal justice or human services who will need to use Spanish in police work and in social service settings. The grammar taught is the same as that in other elementary Spanish courses. The vocabulary is adapted to particular needs and interests of the students. Role-play is used extensively, and students practice "intake" interviews in the course.

■ **Film Studies Minor**

Film studies permits students to acquire skills in the analysis of one of the major art forms and cultural influences of the twentieth century and gives students the opportunity to develop critical tools that can be used to study the relation between film and society, history, aesthetics, philosophy, and psychoanalysis. Film studies courses are selected from the Departments of Art and Architecture, English, History, Modern Languages, Music, Sociology/Anthropology, and Speech Communication. In addition to satisfying requirements in film analysis, film theory, and filmmaking, students pursuing a minor choose courses from departmental offerings. The film studies minor offers the opportunity of extending knowledge and insights from other fields into a new medium. The program may also serve as an introduction to film for the student interested in graduate study in film scholarship and/or filmmaking.

■ **French Course for Business and Economics Students**

Elementary French for business and economics students is designed for students who wish to study French with the intent of enhancing their career opportunities. The pro-

gram is particularly aimed at students interested in international business. It offers, along with a thorough study of grammar and insights into the French way of life, some specialized vocabulary related to the business world and an immediate introduction to French business texts. The course serves as a preliminary step for the student wishing to gain co-op placement in France. Additional information may be obtained from Juliette Gilman, 362 Holmes Hall, at 617-437-3659.

■ Independent Major

After their second quarter in residence, students may petition the Dean of the College of Arts and Sciences for an independent major. The independent major is available particularly for students whose academic or professional goal cannot be met by any of the established programs in the college. Students interested in this option work on a detailed major proposal with faculty advisers and submit the proposal to a counselor in the Dean's Office and to the college curriculum committee. The proposal must fulfill all college requirements and must center on a discipline or combination of disciplines in the Arts and Sciences. Discussion of the proposal with a counselor in the Office of the Dean prior to submission is recommended.

■ International Cooperative Education

Northeastern, extending its unique Cooperative Plan of Education to the international scene, offers qualified upperclass students the opportunity for suitable placement abroad. This exchange program operates in cooperation with overseas institutions and sponsoring agencies. Students whose academic, linguistic, and professional experience qualifies them for overseas positions may work in Great Britain, The Netherlands, Sweden, Ireland, Canada, and the French- and German-speaking countries of Europe. By creating a mutually beneficial situation for students and employers, the program helps to meet a growing need for professionals with the international expertise and language proficiency to help companies expand overseas markets. Detailed information about the program may be obtained from the Department of Modern Languages, 360 Holmes Hall, or the Office of International Cooperative Education, 502 Stearns Center.

■ Irish Studies Program

The Irish Studies Program promotes Irish Studies at Northeastern University through expansion of the curriculum, cultural programs on Ireland and Irish America, and cooperative exchanges of Irish and American students for work and study. The Distinguished Speakers Series presents opportunities for University faculty and staff to develop mutually beneficial relationships with Irish counterparts in all disciplines. The committee is representative of and encourages cooperation with all departments of the University.

The program includes a research project that is a database on characteristics of Irish immigrants in North America. When completed, the project will provide a rich source of data on the origins, arrival, and migration patterns of the Irish in America. The data are drawn from a missing persons column that ran in the *Boston Pilot* from 1831 through 1916. Volume One, which consists of 4,788 entries (1831–1850), was published by the New England Historic Genealogical Society in 1987.

Through International Co-op, students are placed in various businesses and agencies in the Republic of Ireland and in Northern Ireland. The Working Papers in Irish Studies Series provides an opportunity to disseminate manuscripts of current interest. Cultural efforts include a film series, development of a library collection, and art exhibitions, as well as student activities in the Irish Student Club. Plans to develop an interdisciplinary minor are under way. Dr. Ruth-Ann Harris, Department of History, is the director of the Irish Studies Program. For further information, telephone her at 617-437-2907.

■ **Linguistics Minor**

In collaboration with four other departments—English, Modern Languages, Philosophy and Religion, and Sociology/Anthropology—the Department of Psychology offers the linguistics minor, which reflects the current research of such diverse specialists as linguists, sociologists, psychologists, language educators, speech pathologists, neurologists, and teachers of second languages. The minor in linguistics complements the study of any other language-related area, such as computer science, anthropology, brain physiology, or language teaching. Specialized concentrations within linguistics include psycholinguistics, stylistics, language and culture, second-language teaching and applied linguistics, theoretical linguistics, and American Sign Language linguistics. Many research opportunities exist through directed work/study.

■ **Marine Studies Minor**

The marine studies minor provides a program of study in the multidisciplinary aspects of the marine environment. The minor program serves to identify and use the marine-related courses and programs throughout the University and the New England area. Students from any major who have an interest in the marine environment may participate. In the past, students from such diverse areas as journalism and engineering have completed the minor, as well as students in the sciences. The program allows an emphasis in either the scientific or social science/humanistic study of the oceans. Some physical interaction with the sea through achievement in a marine-related skill and an independent project are required of all participants. Dr. Peter Rosen, Department of Geology, is coordinator of the marine studies minor. For further information, telephone him at 617-437-4380.

■ **Marine Science Center Summer Program in Marine Biology**

The summer program allows undergraduate and graduate students from Northeastern and universities all over the country to participate in intensive courses at the Marine Science Center. Summer course offerings include Introduction to Marine Biology; Focus on the Sea: Issues and Nature; Biological Oceanography; Marine Birds and Mammals; Biology of Fishes; Ocean, Coastal, and Shore Studies for Teachers; Diving Research Methods; Developmental Biology of Marine Invertebrates; Biological Laboratory Computing; and Benthic Marine Ecology. Its access to field sites where marine organisms are easily collected makes the MSC laboratory an attractive location for both introductory and advanced courses. Field biology and the use of living marine organisms are emphasized in laboratory-based courses.

Graduate and undergraduate students conduct independent research at the MSC laboratory during the summer and throughout the year. Resident and visiting faculty supervise a variety of research topics, and graduate students from other universities are encouraged to use the laboratory and field sites for thesis research.

■ **Massachusetts Bay Marine Studies Consortium**

Northeastern University is a member of the Massachusetts Bay Marine Studies Consortium. The consortium serves the students and faculty of twenty-two Boston-area colleges and universities. While students may register at Northeastern for these courses, students from all Greater Boston colleges may take these classes, which are taught by specialists and government officials. The consortium's offerings are interdisciplinary and seek to bridge academic disciplines and current concerns in the marine world.

Four courses are offered. A Maritime History of New England surveys that area's marine legacy from the earliest Indian fisheries to shipbuilding to modern commerce. Into the Ocean World: Marine Studies Seminar takes an interdisciplinary approach to marine systems, starting with Boston Harbor as a case study. Water: Planning for the

Future focuses on both local and global water issues. Marine Mammals: Biology and Conservation is taught at Boston's New England Aquarium.

For further information, contact the University's consortium representative, Dr. Peter S. Rosen, the Department of Geology, at 617-437-4380.

■ **Media Studies Minor**

We live in a media-oriented society in which political outcomes and social values are affected, if not determined, by the mass media. Students who pursue the media studies minor examine the media from a number of perspectives. Media studies courses are selected from the Departments of Political Science, Music, Speech Communication, Art and Architecture, Theatre and Dance, History, and English, and the School of Journalism. Each student satisfies requirements in the background and theory of mass media and then completes the program by selecting courses in the areas of media production and media application. The program is considered a strong complement to majors in a variety of fields, given the impact of mass-mediated messages on contemporary organizations and society in general.

■ **New England Conservatory Affiliation**

According to a reciprocal agreement between Northeastern and the New England Conservatory, a limited number of qualified Arts and Sciences students may take courses at the New England Conservatory as part of the regular course load and tuition fee at Northeastern. This arrangement provides, for Northeastern students who qualify, the opportunity to enhance their cultural life by taking part in the richness of music education that is the hallmark of the Conservatory. Northeastern students who participate in this program, as well as any student who declares music as his or her major, are also given full library privileges to the Conservatory.

Students interested in this program should contact Professor Joshua Jacobson, Chairman of the Department of Music, at 617-437-2440.

■ **Performing and Visual Arts**

Performing and Visual Arts incorporates the University's academic and professional arts activities. Established by the College of Arts and Sciences in 1981 in order to expand the role of the arts at Northeastern, the Division of Performing and Visual Arts now includes three undergraduate academic departments—Art and Architecture, Music, and Theatre and Dance—and the nonacademic African-American Master Artists-in-Residency Program (see page 104). Under its *nuArts* banner, the division produces professional visual and performing arts programs in a variety of media, among them the annual *nuArts* Performance Series.

The division also manages the University's performing arts facilities, which include the Blackman Auditorium Theatre Complex, and operates the *nuArts* Ticket and Information Center. Tickets to and information about performing and visual arts events and other campus events are available here, as are tickets and passes to local dance, music, theatre, film, and visual arts events. It also provides free passes to the Museum of Fine Arts and other area museums. In addition, the division maintains a University membership at the neighboring Museum of Fine Arts, which entitles all undergraduate students in the Basic Colleges to free membership privileges.

As the primary presenter of professional arts events at Northeastern University, the Division of Performing and Visual Arts produces a range of programs in film, music, dance, visual arts, theatre, and multimedia performance. Augmenting these programs are performances by the division's artists-in-residence companies, which currently include the Boston Lyric Opera Company (see page 104), the Boston Chapter of the League of Composers—International Society for Contemporary Music (see page 104),

and the New England Composers Orchestra (see below). The division also reaches national and international audiences through a weekly musical radio program, "A Note to You," produced in association with WGBH-FM radio, Boston, for broadcast distribution by the National Public Radio network.

To promote the arts on campus and the division's programs, the division publishes season brochures, event announcements, and various other informational materials.

For information about the academic programs within the Division of Performing and Visual Arts, see pages 56–61.

African-American Master Artists-in-Residency Program The African-American Master Artists-in-Residency Program (AAMARP) is a multicultural professional department within the Division of Performing and Visual Arts. The only program of its kind in the country, AAMARP provides its constituencies with the best possible aesthetic presentations from the widest possible spectrum of artists. Although its artistic residencies, which provide studio space and exhibitions for individual artists, are limited to persons of color, its galleries and community spaces are open to all. Since 1978, the AAMARP facilities have housed dozens of African, Asian, Hispanic, European, and Native American exhibitions, performances, and special programs from artists in the Boston area and throughout the nation.

Boston Lyric Opera Company The Boston Lyric Opera Company (BLO), an artists-in-residence program within Northeastern University's Division of Performing and Visual Arts, is a professional opera company that provides performance opportunities for New England singers, directors, and designers. The company performs an annual season of fully staged opera productions at the University's Blackman Auditorium.

League of Composers—International Society for Contemporary Music The Boston Chapter of the League of Composers—International Society for Contemporary Music (League—ISCM) is an artists-in-residence program at Northeastern within the division's Department of Music and one of the oldest and most prestigious international organizations dedicated to the promulgation of new music. With chapters in more than forty countries and a membership that has included Schönberg, Stravinsky, Bartók, and Ravel, the League—ISCM has introduced the public to works of some of the most important twentieth-century composers. Under the direction of Professor Dennis Miller of the Northeastern Department of Music and through the auspices of the Division of Performing and Visual Arts, the league's activities include an annual concert series featuring the finest interpreters of contemporary idioms; co-sponsorship with the Department of Music of the annual Leo Snyder Memorial Award in Composition and Concert; production of *New Music—Boston*; a calendar listing of Boston's new music activities; and publication of *Essays on Modern Music*, an annual monograph featuring articles on contemporary music written by composers, new music scholars, and critics.

New England Composers Orchestra The New England Composers Orchestra (NECO) is an artists-in-residence program affiliated with the Department of Music and the Division of Performing and Visual Arts. The Boston-based organization is composed of sixty professional musicians formed for the purpose of "reading" new, unperformed works by New England composers. The works are chosen through competition each year and then rehearsed, taped, and discussed in a series of open rehearsals, known as "readings," which are held at Northeastern and are open to the public.

■ Russian Studies Minor

The Russian studies minor is an interdisciplinary program that provides students with an opportunity to develop a broad understanding of the Soviet Union and, secondarily, the Eastern Bloc countries. Through the study of language, literature, society, history,

economy, culture, and behavior, students can become knowledgeable about the people of this enormous region. In addition, the minor may help to prepare students for graduate study or employment in such areas as government, teaching, journalism, and business.

■ **School for Field Studies Affiliation**

The College of Arts and Sciences is affiliated with the School for Field Studies (SFS), a nonprofit educational organization that offers semester-long one-month field study expeditions throughout the world. Semester programs on wildlife management in Athi Plains, Kenya; on coral reef ecology in St. John, U.S. Virgin Islands; and on the rain forest biogeography of North Queensland, Australia; and other areas are offered yearly. Programs combine applied academics with training in field research methods and teamwork—an exciting hands-on approach to science. Credit is granted for the course work. Students of all levels and disciplines are eligible, but participation of Northeastern University students is limited proportionate to the total number of outside participants in the SFS program. Additional information may be obtained from the Office of the Dean of the College of Arts and Sciences.

■ **Teacher Preparation Option**

Students have the option of minoring in education by taking a specific teacher preparation program (usually six courses and student teaching) along with their major program. Such a minor is designed to prepare the student to apply for provisional certification in the Commonwealth of Massachusetts upon graduation.

For most majors, this program is completed in such a way that the education component contributes to the overall credit requirements of the College of Arts and Sciences.

■ **Technical Communication Minor**

Technical communication combines written, oral, and graphics skills with a background in science or technology. The minor in technical communication helps students prepare for careers as technical writers or for careers in which technical communication is a significant part of their jobs. Students in English or other liberal arts studies may elect the minor, as may students from a variety of technological or scientific fields.

■ **Women's Studies Minor**

Women's studies offers students the opportunity to broaden their knowledge and understanding of human experience by approaching various disciplines from a nontraditional perspective—that of women. In the courses offered as part of Northeastern University's interdisciplinary women's studies minor, students will examine traditional stereotypes and roles, learn about women's contribution to our history and culture, and consider the changing situation of both men and women in the public/private arena of life. For further information, contact Dr. Debra Kaufman, Department of Sociology/Anthropology, at 617-437-4984.

■ **Journals**

Essays on Modern Music An annual monograph series of the League of Composers—International Society for Contemporary Music, *Essays on Modern Music* is published through the University's Division of Performing and Visual Arts. The monographs feature articles on topics in contemporary music. Essays are written by composers, new music scholars, and critics. Articles frequently cover specific composers, historical eras, and other topics of interest to both the general reader and music students and scholars.

New England Quarterly Published without interruption since 1928, the *New England Quarterly* is America's leading historical review of New England life and letters. Each book-length issue presents major articles in the fields of literature, history, and culture; a special feature of brief memoranda and recently discovered documents; and a substantial book review section.

Nineteenth-Century Contexts The journal of the Interdisciplinary Nineteenth-Century Studies (INCS), *Nineteenth-Century Contexts*, publishes articles emphasizing an interdisciplinary approach to topics and issues in nineteenth-century studies. It also presents reviews and a forum on subjects of interest to scholars working in the field. Formerly *Romanticism Past and Present*, the journal has broadened its scope to encompass all of the century and to include disciplines such as philosophy, history, art history, and musicology.

The Scriblerian Founded in 1969, *The Scriblerian* is published in the autumn and spring at Northeastern's and Temple University's English departments. Its Northeastern editor is Dr. Arthur J. Weitzman. A semiannual news journal devoted to research on the Augustan Age of English literature (1660–1750), it prints reviews and articles on such figures as Dryden, Pope, Swift, Defoe, Fielding, Richardson, Smollett, and Sterne. The journal is also affiliated with and financially supported by Queen's University (Kingston, Ontario), the University of Florida (Gainesville), and the University of Tennessee (Knoxville).

Studies in American Fiction A publication that presents articles, notes, and reviews on all aspects of American prose fiction, *Studies in American Fiction* has a readership and contributors who represent an international community of literary scholars. The journal's broad professional purpose is to publish discoveries in, documents on, and new interpretations of important works of American fiction. The publication of Volume 15 in 1988 marked sixteen years of Northeastern's sponsorship of *Studies in American Fiction*, the first scholarly journal to be published at the University.

School of Journalism



LaRue W. Gilleland, M.A., *Professor and Director*

Associate Professors

Patricia A. Kelly, Ph.D.
William Kirtz, M.S.

Assistant Professors

Marjorie M. Brooks, M.A.
Allan Chernoff, M.A.
Charles F. Fountain, M.A.
Nancy Gallinger, M.A.

Roy O. Harris, M.A.

James Ross, M.A.
William Smith, J.D.

Visiting Professor

Nicholas Daniloff, M.A.

Degrees Offered: Bachelor of Arts, Bachelor of Science

The School of Journalism, a unit of the College of Arts and Sciences, prepares students for careers in news media and related fields. It emphasizes skills in writing, editing, information gathering, photojournalism, and design and graphics that may be applied to numerous fields.

The school offers four undergraduate concentrations:

- Advertising
- Newspaper/Print Media
- Public Relations
- Radio/Television News

■ Professional Preparation

Journalism provides many exciting, rewarding career opportunities. Northeastern University journalism graduates work for daily and weekly newspapers, news departments of radio and television stations, wire services, general and specialized magazines, public relations departments, and advertising agencies.

The school also seeks to contribute to the existing body of knowledge in journalism/mass communications, especially knowledge that will help news media practitioners and educators perform their jobs with increasing effectiveness. The school cooperates with media and related agencies in sponsoring professional workshops and seminars that students are invited to attend.

■ The Major

A journalist should have a broad background of undergraduate liberal arts courses. At Northeastern, as in most major university journalism programs, the formula for the bachelor's degree in journalism is a combination of seventy-five percent arts and sciences courses and twenty-five percent professional courses. The ideal schedule is one or two journalism courses each quarter, with additional work in the humanities, social sciences, physical sciences, and economics.

Students may receive a bachelor of arts or bachelor of science degree. The bachelor of arts degree requires completion of a foreign language requirement. Both require a college core curriculum.

Because journalism skills can be better expanded and understood with the aid of a laboratory, upperclass students who major in journalism are encouraged to participate in the Cooperative Plan of Education. Co-op assignments with newspapers, radio and television stations, news bureaus, advertising agencies, and public relations offices provide practical laboratory experience important in helping students prepare for careers in mass communications. Such experience also offers the student an advantage if he or she decides to seek admission to a graduate program.

Students complete a professional core program that includes Newswriting, Editing, Law of the Press, History of Journalism, Photojournalism, and Journalism Ethics. In addition, each major takes courses in one of the four concentrations—advertising, newspaper/print media, public relations, or radio/television news—according to his or her career objective. The school's facilities include, among other rooms, a design and graphics lab, a photojournalism darkroom, and newswriting and editing labs containing computer equipment found in many major publishing companies. The school also shares a television/media studio with a number of other academic departments.

Students benefit from the school's close relationship with news media and professional associations. For example, the New England Press Association, representing three hundred weekly and daily newspaper publishers in six states, maintains its office on the Northeastern campus. Students have the opportunity to attend a wide range of seminars and conferences sponsored by NEPA and other organizations.

■ The Minor

No minor is offered.

Boston-Bouvé College of Human Development Professions



Paul M. Lepley, Ed.D., *Dean*

Arlene T. Greenstein, Ph.D., *Associate Dean for Academic Affairs*

Janice Walker, A.B., *Assistant Dean and Director of the Graduate School*

Michael E. Gladstone, M.A., *Assistant Dean*

Cornelius B. O'Leary, B.A., *Director of Graduate Admissions*

Boston-Bouvé College of Human Development Professions offers students the high-quality instruction, guidance, and practical experience essential for the development of accomplished practitioners in the human development professions. Typically, these students share a commitment to improve the quality of life for people who will seek their services in community, recreational, clinical, or educational settings. Undergraduate

programs are offered in the Human Services Program and in three departments: Education; Health, Sport, and Leisure Studies; and Physical Therapy.

Boston-Bouvé College offers students the individual attention and encouragement available only in a small college within a large university. College facilities, clubs, and student events are supplemented and enhanced by the resources of Northeastern University and the metropolitan Boston area.

■ **The Five-Year Cooperative Education Program**

In the freshman year, students receive a grounding in the liberal arts and sciences and an orientation to their chosen profession. As sophomores, students are introduced to specific competencies that are developed and expanded throughout the program. In the junior and senior years, professional theory and practices are emphasized, and all students have the opportunity to synthesize knowledge and skills through supervised experiences in clinical practice, student teaching, field experience, or internship. In addition, beginning in the sophomore year, each curriculum is enriched by cooperative education work experiences for two of the four quarters in an academic year. Co-op jobs afford students the valuable opportunity to develop work skills related to the helping professions, usually within their area of specialization. Cooperative education is an integral part of all programs offered in the college.

■ **Honors Program**

The Boston-Bouvé College of Human Development Professions participates in the University-wide honors program. For further information, refer to the University Honors Program in the Undergraduate Admissions section on pages 16–17.

■ **Facilities**

The facilities of the college include classrooms, faculty and administrative offices, and areas for research, professional endeavors, and extracurricular activities. Dockser Hall houses a gymnasium, dance studio, computer rooms, exercise physiology laboratory, locker and shower facilities, and a motor learning laboratory. The swimming pool, weight room, handball/racquetball courts, and locker and shower facilities are located in Barletta Natatorium. Cabot Building includes a large gymnasium and gymnastics, wrestling, exercise, and weight-training facilities in addition to an athletic training laboratory, indoor track, and locker rooms.

The Department of Education oversees the Reading Clinic, which provides corrective instruction for area schoolchildren and clinical experience for education students. Similarly, the Russell J. Call Children's Center provides day care for children from two years and nine months to five years of age and a laboratory setting for students seeking teacher certification. Children's literature and related learning resource materials are housed in the F. André Favat Learning Resources Center and Library of Children's Literature.

The remodeled and expanded facilities of the Department of Physical Therapy are located in Mary Gass Robinson Hall. The Lupean Professional Library maintains an up-to-date collection of physical therapy and medical textbooks and periodicals that supplement the University library. The Human Gross Anatomy Laboratory, five classroom laboratories, and two research laboratories are designed and equipped specifically for the practice of clinical procedures and research.

The Hearing, Language, and Speech Clinic in the Forsyth Building serves clients ranging from toddlers to the elderly. Diagnostic evaluations and treatment are provided to clients who demonstrate a variety of communication disorders. Students may also engage in academic research in communication disorders. The Communications Research Laboratory makes available an array of up-to-date equipment and computer

technology to aid students in generating, analyzing, and compiling the results of their work.

The Warren Center serves as a practical laboratory and as a recreation center for the college. Its athletic fields, tennis courts, ropes course, cross-country ski trails, winterized cottages, and Hayden Lodge provide year-round opportunities for outdoor learning twenty-five miles from the Boston campus. Freshman orientation, courses, seminars, and workshops are conducted at the center throughout the year.

■ **Admission Fieldwork, Student Teaching, Clinical Practicums, and Internships**

Each major area of study requires satisfactory completion of specified prerequisites before assignment to fieldwork, student teaching, clinical practicum, or internship. For certain programs during fieldwork, student teaching, clinical practicum, and internship, students must be covered by professional liability insurance purchased for a moderate fee through the University. In the fourth year, before the first supervised clinical education experience, physical therapy students must be examined by physicians in the University Health Services, at a moderate fee, or by a personal physician. Students in programs offered by the Department of Education and the Department of Health, Sport, and Leisure Studies must present evidence that they are free of tuberculosis before engaging in student teaching.

■ **Graduation Requirements**

Degrees Students in the early childhood education, elementary education, athletic training, cardiovascular health and exercise, human services, community health education, physical education teacher preparation, and school health education programs earn a bachelor's degree. Students in the recreation management and therapeutic recreation program specializations are awarded the Bachelor of Science in Recreation and Leisure Studies. Students graduating in physical therapy receive the degree of Bachelor of Science in Physical Therapy. These degrees are awarded to qualified candidates who have completed the prescribed curricula. Student teaching, field experience, or clinical practice is an integral part of the curriculum and satisfactory completion is required for graduation. All majors require demonstration of computer literacy and satisfactory completion of the Middler-Year Writing Requirement, in addition to the other University and college requirements, prior to graduation.

■ **Qualifications**

Quantitative The quarter hours required in each curriculum differ.

Health, Sport, and Leisure Studies

Athletic Training/Cardiovascular Health and Exercise 184
Athletic Training/Teacher Preparation 186*
Cardiovascular Health and Exercise 178
Physical Education Teacher Preparation 180*
Recreation Management 173
Therapeutic Recreation 173
Community Health Education 178
Community Health Education/Cardiovascular Health and Exercise 183
School Health Education 180*
School Health Education/Athletic Training 184*

Education

Early Childhood Education 177*
Elementary Education 180*

Physical Therapy

Physical Therapy 175

Human Services

Human Services 176

* Subject to change pending curriculum revisions.

Students must satisfy the requirements of the Department of Cooperative Education to become eligible for their degrees.

Senior-year course work and required experiences must be completed in full-time residence at Northeastern University or in an educational setting approved by the college.

Qualitative The overall cumulative quality-point averages required to enter each class level are explicitly stated in the *Student Handbook*. Throughout the professional sequence, students must maintain required averages and must demonstrate a high level of personal and professional maturity to continue field practice and be approved for graduation. Because of accreditation recommendations and differences in curricula, variations in qualitative requirements may occur.

Transfer students in any curriculum may be accepted into the college at upperclass levels if there are available spaces. However, transfer into the physical therapy program is limited to only the freshman and sophomore years. Each transcript is individually assessed for qualification, placement, and program design. For more information on transferring, see Admission of Transfer Students, page 22.

■ **Graduation with Honors**

Candidates who have attained superior grades in their academic work will be graduated with honors. Upon special vote of the faculty, a number of this group may be graduated with high honors or with highest honors. Students must have been in full-time attendance at the University for at least six quarters before they become eligible for honors at graduation.

■ **Program Accreditation**

The curriculum in physical therapy is accredited by the American Physical Therapy Association. The professional program specialization in athletic training is accredited by the National Athletic Trainers Association.

■ **Licensure/Registration**

All fifty states have laws governing the practice of physical therapy. To be eligible to practice physical therapy, graduates must meet the specific legal requirements of the state in which they wish to work. In most states the requirements include graduation from an accredited school of physical therapy and a satisfactory grade on a written examination. Graduates are responsible for determining what the specific legal requirements are in the state in which they seek employment.

■ **Certification**

Upon successful completion of the programs in early childhood education, elementary education, school health education, and physical education, students are eligible to apply for certification by the Commonwealth of Massachusetts. Certification is required for public school teaching but does not guarantee a position. Reciprocal certification is available in many states. Graduates are responsible for determining the requirements of the states in which they are interested.

Department of Education

Maurice Kaufman, Ph.D., *Professor and Acting Chairman*

<i>Professors</i>	<i>Associate Professors</i>	<i>Assistant Professors</i>
Vaughn Guloyan, Ed.D.	Nicholas J. Buffone, Ph.D.	Thomas H. Clark, M.A.
John D. Herzog, Ph.D.	Leslie A. Burg, Ed.D.	Carlton B. Lehmkuhl, Ph.D.
Melvin Howards, Ph.D.	Mary J. Lee, M.Ed.	John F. Maguire, M.Ed.
Mervin D. Lynch, Ph.D.	Joseph Meier, Ed.D.	
Sandra M. Parker, Ed.D.	Irene A. Nichols, Ed.D.	
	Barbara A. Schram, Ed.D.	

Degree Offered: Bachelor of Science in Education

The Department of Education provides teacher preparation programs in a variety of fields and levels. It also offers basic and advanced courses in the humanities and behavioral sciences for students in education, human services, and other human development professions.

The department's aim is to make it possible for students to acquire the competencies necessary for provisional certification and success in teaching and to understand the processes of intentional socialization.

■ **Teacher Preparation: The Five-Year Cooperative Education Program**

Effective September 1, 1993, all students seeking teacher certification at any grade level (N–12) will need to earn a bachelor's degree with a major or interdisciplinary major in the liberal arts and sciences. Students seeking certification as an early childhood or an elementary teacher will complete a joint program between the College of Arts and Sciences and Boston-Bouv  College of Human Development Professions.

Early Childhood Education Students seeking certification in early childhood education will select a major in the College of Arts and Sciences and will take appropriate education courses in Boston-Bouv  College. This broad academic background, combined with experiences in cooperative education, permits the development of a cohesive professional base. Pre-student teaching in appropriate field settings is an integral part of several required courses. The Russell J. Call Children's Center provides experiences in fieldwork for students in the early childhood education program.

Elementary Education Students who will be candidates for certification as an elementary education teacher will choose a major from the College of Arts and Sciences and, in addition, will complete a sequence of courses in education. The competencies necessary for teaching come from three sources: course work, experiences in the Cooperative Plan of Education, and prepracticum field activities.

Secondary Education Students preparing to teach biology, chemistry, earth science, English, history, mathematics, physics, or Spanish in the schools of Massachusetts will find majors in the College of Arts and Sciences in these respective fields. Students majoring in economics, philosophy, political science, or sociology may pursue state certification in the teaching of social studies. Specified competencies established for certification in Massachusetts may be acquired through cooperative education experiences, designated courses, and a quarter of full-time student teaching, arranged by the University's Department of Education.

■ Student Teaching

Student teaching is a full-time experience for one complete academic quarter during the senior year. A University professor and a cooperating classroom teacher share responsibility in the supervision of each student teacher.

To assist student teachers, the department uses three support units: the Reading Clinic, the F. André Favat Learning Resources Center, and the Russell J. Call Children's Center.

■ Teacher Certification

As of September 1, 1993, all students seeking teacher certification at any grade level (N-12) in the Commonwealth of Massachusetts will need to earn a bachelor's degree with a major or interdisciplinary major in the liberal arts and sciences. In addition, candidates for this provisional certification will need to provide evidence that appropriate course work in education as well as prepracticum and student teaching assignments have been successfully completed.

The requirements for obtaining a certification for teaching vary from state to state. Graduates are responsible for determining the requirements of the states in which they are interested.

■ Services Offered by the Department of Education

The F. André Favat Learning Resources Center The center houses an extensive library of children's literature, curriculum materials, books, journals, tests, and other materials designed primarily to support academic programs of the department and the Boston-Bouvé College of Human Development Professions, but it is open to all University students.

The Reading Clinic See page 234.

Speed Reading See page 234.

Department of Health, Sport, and Leisure Studies

Carl S. Christensen, Ph.D., *Professor and Chairman*

Professor

Richard C. Zobel, Ed.D.

Associate Professors

Marilyn A. Cairns, Sc.D.

Robert S. Curtin, Ed.D.

Kathleen Davis, Ph.D.

Elaine G. Eliopoulos, Ed.D.

Patricia M. Fetter, Ph.D.

William J. Gillespie, Ed.D.

Dorett M. Hope, Ed.D.

Kerkor Kassabian, M.Ed.

Richard B. Morrison, Ed.D.

Judith A. Noblitt, M.Ed.

Frank M. Robinson, M.Ed.,
C.A.G.S.

Assistant Professors

George R. Atkinson, Ed.D.

Glenn A. Boden, M.Ed.

Diane S. Graham, Ph.D.

Donald Schneider, Ph.D.

Charles A. Starkey, Ph.D.

Instructors

Kimberly L. Mossburg, M.S.

George B. Ransom, Ed.D.

Lecturers

Colleen Fritze, M.S.

Wendy Gammons, M.S.

Degrees Offered: Bachelor of Science in Education, Bachelor of Science in Recreation and Leisure Studies

The department provides program specializations and services, conducts research, and disseminates knowledge concerned with improving the quality of life with respect to health, sport, and leisure. Faculty are committed to pre- and in-service preparation of

practitioners to serve people of all ages and also to the scholarly investigation related to the six program specializations offered by the department.

■ The Five-Year Cooperative Education Programs

The department offers programs in athletic training, cardiovascular health and exercise, school and community health education, physical education teacher preparation, recreation management, and therapeutic recreation. With appropriate use of electives, students may combine certain majors, for example, athletic training/cardiovascular health and exercise, athletic training/physical education teacher certification, school health education/athletic training, community health education/cardiovascular health and exercise.

All students in this department are expected to maintain a specific quality-point average at each class level (see the current *Student Handbook for the Basic Colleges*). Fees may be assessed in courses requiring highly specialized equipment, supplies, or off-campus facilities.

Athletic Training

Degree Offered: Bachelor of Science in Education

■ Professional Preparation

The athletic trainer plays an important role not just in professional sports, but also in the organized and recreational activities of sportsmen and -women from all walks of life.

A necessary link between the athlete, the coach, and the physician, the athletic trainer provides services in preventing, treating, and rehabilitating sports injuries. The trainer's duties include advising on proper conditioning techniques to help reduce injury, assessing the severity of injuries that do occur and administering basic first aid, and supervising postinjury rehabilitation programs.

In general, athletic trainers work in organized sports—either for secondary school or college athletic teams or for professional teams engaged in a variety of sports.

■ The Five-Year Cooperative Education Program

This five-year Bachelor of Science in Education program specialization is designed specifically for students interested in careers as athletic trainers. The athletic training program specialization may be combined with the cardiovascular health and exercise, health, or physical education teacher preparation programs. These combinations of study may be especially valuable since, for example, many schools hire one person to be both physical education or health education teacher and athletic trainer. Because of pending changes in state teacher certification regulations, the curriculum which combines athletic training and physical education or health education is subject to change.

Students interested in the athletic training program major must be accepted into Northeastern's Department of Health, Sport, and Leisure Studies (see Undergraduate Admissions, page 10). At the completion of their first year of study, they may petition for acceptance into the athletic training program. To be accepted, students must have earned at least a 1.85 quality-point average (C⁺) during their second year. They must continue to meet specified requirements to remain in the program.

■ Certification

Students who graduate from the athletic training program are eligible to take the National Athletic Trainers Association Certification Examination. Upon passing the

xamination, an individual is eligible to apply for Massachusetts state licensure in athletic training.

Those individuals who elect physical education or health education teacher preparation as a co-major may be eligible to apply for certification as teachers of physical education or health education. Certification in athletic training and/or teacher preparation does not guarantee a position in either profession.

■ Accreditation

The professional program specialization in athletic training is accredited by the National Athletic Trainers Association.

■ Basic Course Requirements*

General Requirements for Freshmen (year one)

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
English I and II	8	Issues in Health	4
Biology I and II	8	Group Dynamics	3
Chemistry I	5	Swimming	1
Mathematics	4	Physical Conditioning	1
Social Science I	4	Gymnastics I and II	2
Human Development	4	First Aid	2
Basketball	4	Life/Career Plan	4
Track and Field	1	History/Philosophy of Physical Education	3
Human Movement	3		

Upperclass Requirements (years two–five)

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Anatomy/Physiology I and II	8	Therapeutic Modalities	4
Computer Use	4	Weight Training	1
Human Development II	4	Kinesiology	4
Physics	4	Statistics	4
Basic Athletic Training	3	Foundations of Psychology	4
Basic Athletic Training Lab	1	Middler-Year Writing Requirement	4
Clinical Athletic Training	2	Therapeutic Reconditioning	4
Measurement and Evaluation	4	Motor Learning	4
2 Teaching, Analysis, and Coaching courses	4	Theory of Coaching	2
Exercise Physiology	4	Nutrition	4
Advanced Athletic Training	4	Psychology of Sport	2
Physical Conditioning Programming	4	Overview of Disabilities	4
3 General Studies electives	12	Athletic Training Internship	6
Senior Seminar	4	Department requirements for second specialization	18–26
Physical Education Skill elective	1		

* Graduation requirements: athletic training/cardiovascular health and exercise—184 quarter hours; athletic training/physical education teacher preparation—186 quarter hours; athletic training/health education teacher preparation—184 quarter hours.

Cardiovascular Health and Exercise

Degree Offered: Bachelor of Science in Education

■ Professional Preparation

Students interested in careers as preventive/rehabilitative exercise technologists and specialists or health and fitness instructors in private and public agencies, commercial health and fitness centers, hospitals and outpatient clinics, or businesses and corporations may obtain a bachelor of science degree in the program of cardiovascular health and exercise.

■ The Five-Year Cooperative Education Program

The program specialization in cardiovascular health and exercise is focused on the health and exercise sciences as they relate to physical fitness, health promotion, and primary and secondary prevention of cardiovascular disease. In addition to the applied science base, students also take courses designed to help them acquire the knowledge and skills necessary for physical and health assessment, exercise testing, exercise prescription, and program development and supervision for adults in preventive and rehabilitative health and exercise programs.

■ Certification

Successful completion of the program specialization prepares the student to apply for the certification examination for preventive/rehabilitative exercise technologist or specialist conducted by the American College of Sports Medicine.

■ Basic Course Requirements*

General Requirements for Freshmen (year one)

Course	Q.H.	Course	Q.H.
Biology I and II	8	Mathematics	4
English I and II	8	Current Health Issues	4
Human Development I and II	8	First Aid	2
Social Science	4	Guided Skills Electives	3
Human Movement	3	Swimming	1
Life/Career Planning	4	Physical Conditioning	1

Upperclass Requirements (years two–five)

Course	Q.H.	Course	Q.H.
Anatomy/Physiology I and II	8	Statistics	4
Motor Development	4	Introduction to Counseling	4
Chemistry I and II	10	Measurement and Evaluation	4
Basic Athletic Training	3	Exercise Physiology	4
Basic Athletic Training Lab	1	Commercial Recreation Marketing	4
Computer Use	4	Budget Analysis	4
Psychology I	4	Exercise Testing Prescription	3
Communicable/Degenerative Diseases	4	Weight Training	1
Health Counseling	4	Electrocardiography	4
Electives	20	Physical Conditioning Programming	2
Community Health	4	Nutrition	4
Special Problems	4	Middler-Year Writing Requirement	4
Kinesiology	4	Supervised Field Experience	12

* Minimum graduation requirement—178 quarter hours or a grade of C (2.0) or better in all professional courses.

Note: A grade of C or better is required in each professional course prior to field experience.

Physical Education Teacher Preparation

Degree Offered: Bachelor of Science in Education

■ Professional Preparation

Students in physical education have the opportunity to prepare for professional careers as elementary and secondary physical education teachers and coaches in public and private schools. Candidates may also combine their physical education studies with the allied programs of athletic training, cardiovascular health and exercise, health education, community health, therapeutic recreation, or recreation management. They may prepare for diverse opportunities in community agencies, business, government, and industry, where the need exists for physical activity, sports, fitness, and health experts.

■ The Five-Year Cooperative Education Program

In addition to a strong background in general education, applied science, and pedagogy, each student in the physical education teacher preparation program is expected to demonstrate a competent level of knowledge and proficiency in such physical skills as swimming, gymnastics, track, badminton, tennis, volleyball, and basketball. Skill may be demonstrated through competency testing or by taking the appropriate courses. Major students are assigned supervised student teaching or field experiences in schools or agencies throughout the Greater Boston area as appropriate to their areas of concentration. In addition, students have the opportunity to increase their experience with children or adults through cooperative work assignments and in prepracticum courses.

■ Certification

At this time the regulations for certification as a teacher of physical education in the Commonwealth of Massachusetts have not been finalized. The academic program will be adjusted to conform with the new regulations for certification.

Upon successful completion of the physical education requirements for graduation, students will be eligible to apply for certification to teach in the Commonwealth of Massachusetts schools. Certification in physical education does not guarantee a teaching position.

■ Basic Course Requirements*

General Requirements for Freshmen (year one)

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Biology I	4	Biology II, Chemistry I, or Physics	4–5
English I and II	8	Social Science	4
Human Movement	3	Swimming	1
Physical Conditioning	1	Life/Career Planning	4
Gymnastics I and II	2	Basketball	1
Human Development I	4	Mathematics	4
Health Issues	4	Group Dynamics	3
First Aid	2	History and Philosophy of Physical	
Track and Field	1	Education	3

Upperclass Requirements (years two–five)

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Anatomy/Physiology	8	Computer Use	4
Motor Development	4	Human Development II	4
Elementary School Activities† or	4	Tennis	1
Secondary School Activities†	3	Kinesiology	4
Statistics	4	Teaching, Analysis, and Coaching courses	8
Critical Teaching Skills†	4	Curriculum Development	3
Exercise Physiology	4	Theory of Coaching/Play	2
Overview of Disabilities†	4	Volleyball	1
Basic Athletic Training	3	Supervised Student Teaching‡	12
Administration of Physical Education	4	Electives	30
Activity Skill electives	4	Badminton	1
Measurement and Evaluation	4	Foundations of Psychology	4
Motor Learning	4	Middle-Year Writing Requirement	4

* Minimum graduation requirement—180 quarter hours and a 2.5 cumulative quality-point average in all required department courses.

† Indicates a prepracticum course with field experience.

‡ A cumulative quality-point average of 2.5 in all required department courses prior to Supervised Student Teaching.

Note: The curriculum may be altered because of changes in state teacher certification regulations.

Recreation Management

Degree Offered: Bachelor of Science in Recreation and Leisure Studies

■ Professional Preparation

The academic and work experiences in recreation management are designed to help the student develop those skills most necessary to obtain entry-level management positions in commercial, government, and nonprofit recreation. Students wishing to continue their education appropriately seek admission to Master of Business Administration (M.B.A.) or Master of Public Administration (M.P.A.) degree programs.

■ The Five-Year Cooperative Education Program

Students in the recreation management specialization have academic and work experiences that combine to give them an opportunity to develop a strong general education and marketable job skills.

The academic work places heavy emphasis on the behavioral sciences as they apply in leisure and managerial settings. This includes an intensive in-residence program in leadership and human relations at the University's Warren Center in Ashland, twenty-five miles west of Boston.

Equally heavy emphasis is placed on developing a working knowledge of marketing, budgeting, planning, evaluation, and computer applications as they apply to the leisure industry. The case method of teaching is widely used to help students identify and solve practical problems facing recreation managers in the commercial and nonprofit sectors.

The Cooperative Plan of Education provides opportunities for professional work experiences in health clubs, racquet clubs, resorts, tourism agencies, government, and nonprofit agencies.

■ Basic Course Requirements*

General Requirements for Freshmen (year one)

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Biology I and II	8	Speech Fundamentals	3
English I and II	8	Foundations of Leadership and Leisure	
Social Science	4	Services	4
Life/Career Planning	4	Computer Use	4
Health Issues	4	Education elective	4
Group Dynamics	3	Professional Skills	4

Upperclass Requirements (years two–five)

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Human Development I and II	8	Science electives	8
Anatomy/Physiology I and II	8	Budget Analysis	4
Introduction to Recreation and Leisure		Elements of Outdoor Recreation Planning	4
Services	3	Organizational Behavior	3
Research Applications	4	Administration of Recreation and Parks	4
Program Planning	4	Program Evaluation	4
Commercial Recreation Marketing	4	Social and Psychological Impacts of Illness	
Internship Seminar	1	and Disabilities	4
Internship in Recreation Management	12	Concepts of Leisure	4
Senior Seminar	4	Therapeutic Recreation elective	4
Guided electives	28	Middler-Year Writing Requirement	4
Research Methods	4		

* Minimum graduation requirement—173 quarter hours.

Therapeutic Recreation

Degree Offered: Bachelor of Science in Recreation and Leisure Studies

■ Professional Preparation

The unique problems of special needs groups in our society have recently become the focus of intense study. As our understanding of their needs increases, so too does our appreciation of the therapeutic values associated with participation in recreation activities. This has expanded career opportunities for students interested in recreation and leisure studies.

Therapeutic recreation specialists may be members of health-care teams in clinical and residential treatment centers, or they may serve as advocates for disabled persons who live in the community and wish to pursue leisure activities independently.

■ The Five-Year Cooperative Education Program

Therapeutic recreation students take courses in behavioral and social sciences, counseling techniques, and program planning for various special needs populations. The therapeutic recreation program specialization is designed to help equip students with the professional job skills essential to work with disabled people in institutions and community-based settings, including hospitals, rehabilitation facilities, nursing homes, schools, and residential centers as well as day-care vocational/avocational centers in therapy collaboratives. Students are scheduled for a one-week resident camp experience during the first year at the Warren Center in Ashland, twenty-five miles west of the Boston campus. A variety of experiential education opportunities supplementing regular course offerings is available through ECHO (a camp affiliated with Northeastern University serving disabled children and their nondisabled peers).

■ Basic Course Requirements*

General Requirements for Freshmen (year one)

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Biology I	4	Speech Fundamentals	3
English I and II	8	Foundations of Leadership and Leisure	
Social Science	4	Services	4
Life/Career Planning	4	Computer Use	4
Health Issues	4	Education elective	4
Group Dynamics	3	Professional Skills	4
Mathematics	4		

Upperclass Requirements (years two–five)

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Human Development I and II	8	Leisure Counseling	4
Anatomy/Physiology I and II	8	Research Applications	4
Science electives	8	Program Planning	8
Introduction to Recreation and Leisure		Organizational Behavior	3
Services	3	Overview of Physical Disabilities	4
Internship Seminar	1	Social and Psychological Impacts of	
Internship	12	Disabilities	4
Senior Seminar	4	Management of Recreation	4
Guided electives	28	Budget Analysis	4
Foundations of Psychiatric Services	4	Concepts of Leisure	4
Research Methods	4	Middler-Year Writing Requirement	4

* Minimum graduation requirement—173 quarter hours.

School and Community Health Education

Degree Offered: Bachelor of Science in Education

■ Professional Preparation

Health education is concerned with improving individual and community health through educational activities. While working in such settings as volunteer health agencies, public health clinics, elementary and secondary schools, or health-planning organizations, the health educator facilitates behavior change as a means to enriching the quality of life. The health educator uses techniques and information from both medical and educational fields in order to assist individuals and communities dealing with the emotional, physical, and social aspects of health.

■ The Five-Year Cooperative Education Program

Since health has psychological, physical, and social components, the major is organized to help students develop an understanding of each of these, as well as their interaction. Courses during the first part of the program emphasize the foundations of health education in the social and life sciences. Practical experience in health education is available throughout the program, including cooperative work experiences to provide the student with an opportunity to apply theory and techniques with Boston area groups. Major courses on contemporary health issues help the student understand the details and complexities of several important health topics. Educational issues and approaches are included in courses to help students understand the role of education in improving health both in schools and in the general community.

This program of study is intended to produce graduates with the competence to assess the health education needs of groups and to develop, organize, and evaluate effective educational activities. Throughout the program of study, the concepts of prevention, health promotion, wellness, and holistic health serve as common threads in professional preparation. The development of specific competencies for health education roles is an objective of the program, within which there is the opportunity to specialize in school health education or community health education. Professional preparation in school health education differs from community health education in the application of fieldwork or internship experiences. The former applies fieldwork in public or private school settings, while the latter applies fieldwork to other private or public agencies such as clinics, hospitals, or state and local health departments. Students selecting an emphasis in school health education must meet state certification requirements for field experiences in prepracticums and the practicum in a secondary school setting.

■ Certification in School Health Education

Upon successful completion of the requirements for graduation in school health education, students are eligible to apply for certification to teach (grades 5–12) in the Commonwealth of Massachusetts.

At this time the regulations for certification as a teacher of health in the Commonwealth of Massachusetts have not been finalized. The academic program will be adjusted to conform to the new regulations for certification.

■ Approval in Community Health

There are no certification criteria for students in community health education. However, all students must satisfy departmental requirements before being approved for graduation.

■ Basic Course Requirements*

General Requirements for Freshmen (year one)

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Chemistry I and II	10	First Aid	2
Biology I and II	8	Social Science II	4
English I and II	8	Foundations of Health	2
Social Science I	4	Introduction to Safety	2
Health Issues	4	Instructional Resources	2
Mathematics	4	Computer Use	4
Physical Education activity elective skill	1		

Upperclass Requirements (years two–five)

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Psychology I and II	8	Microbiology	4
Human Development I and II	8	Analysis of Instruction†	4
Anatomy/Physiology I and II	8	Mental Health	4
Health Concerns of Youth‡	4	Introduction to Special Education	4
Measurement and Evaluation	4	Teaching Procedures/Curriculum in	
Drug Use/Abuse	4	School/Community Health‡	4
Communicable/Degenerative Diseases	4	Human Sexuality	4
Longevity and Aging	4	Organization/Administration of Health	
Community Health	4	Education	4
Seminar I and II	4	Health Counseling	4
Education elective	4	Practicum‡	12
General Studies electives	16	Physical Education activity electives	1
Nutrition	4	Middler-Year Writing Requirement	4

* Minimum graduation requirement—178 quarter hours and a 2.5 cumulative quality-point average in all required department courses.

† A prepracticum course with field experience.

‡ A cumulative quality-point average of 2.5 in all required courses is necessary prior to practicum.

Note: The curriculum may be altered because of changes in state teacher certification regulations.

Students selecting an emphasis in school health education must meet state certification requirements for field experiences in prepracticums and the practicum in a secondary school setting (grades 5–12). Those selecting community health receive field experiences with community agencies, hospitals, and local or state health departments.

■ Services Offered by the Department of Health, Sport, and Leisure Studies

All-University Electives in Health Education The program in school and community health education is interested in the health status of the University community. In an attempt to meet the health needs of students, several elective courses are offered regularly on selected health issues of potential personal and professional interest to any University student. Courses on such topics as stress and health, nutrition, sexuality, mental health, consumer health, drug use/abuse, and aging are designed to provide current information and concepts related to wellness and health promotion. Lectures, discussion groups, and demonstrations provide students with the opportunity to understand the significance and application of recent health-related research findings in their own lives.

All-University Electives in Physical Education A broad selection of electives in dance, sports, aquatics, and fitness activities is offered for all University students. All classes are open to men or women with instructional modifications where appropriate.

The elective program focuses on the lifetime use of sports, fitness, dance, and aquatics for recreational satisfaction and participation. Classes are subject to cancellation if enrollments are too low.

Dance Theatre The Northeastern University Dance Theatre offers students interested in dance as a performing art the opportunity to choreograph and/or perform in concert.

In addition to an annual University concert production, this group presents several lecture-demonstrations and/or community concerts each year. Admission to the dance group is by audition.

Health, Sport, and Leisure Club Organized by students in the department, the Health, Sport, and Leisure Club participates in projects of student interest that relate to departmental and professional concerns or issues. The club plans guest speakers, student workshops, information exchanges, orientation programs for new students, and a volunteer service for local programs.

Department of Physical Therapy

David A. Lake, Ph.D., *Assistant Professor and Acting Chairman*

<i>Assistant Professors</i>	<i>Clinical Supervisors/</i>	Nancy Goldin, M.Ed.
Arlene Antilla, Ph.D.	<i>Clinical Instructors</i>	Mary O'Brien, M.P.H.
Robert Sikes, Ph.D.	Cindy Buchanan, M.S.	Nancy Seaver, M.P.T.
Mary Slavin, M.S.	Ann L. Charrette, M.A.	Luis Vargas, M.Ed.
	Marguerite Geer, M.A.	
	Lisa Giallonardo, M.S.	

Degree Offered: Bachelor of Science in Physical Therapy

The Department of Physical Therapy is dedicated to the preparation of therapists who can provide patient care of the highest quality in a time of changing concepts, new trends, and new challenges. Students have the opportunity to acquire the skill to help patients gain functional independence and to learn to recognize and assist with emotional and socioeconomic problems that affect recovery.

■ Professional Preparation

Physical therapy is one of the health professions contributing to the delivery of comprehensive health care. The physical therapist is highly skilled in evaluation procedures and in the planning and execution of treatment programs appropriate to a patient's condition or disabilities. Additional responsibilities may include health-care planning and community service.

Physical therapists are employed in such institutions as general hospitals, children's hospitals, university hospitals, rehabilitation centers, schools or centers for disabled children, extended-care facilities, freestanding outpatient clinics, home-health agencies, and community, state, and federal agencies. Private practice is chosen by some physical therapists. In addition, there are increasing opportunities in teaching and research in physical therapy.

■ The Five-Year Cooperative Education Program

The five-year program in physical therapy, based on the Cooperative Plan of Education, is unique in physical therapy education.

The program of study integrates liberal arts and sciences and professional courses, with major emphasis on liberal arts in the first two years of the program and on professional preparation in the last three years. The professional courses cover such subjects as anatomy, kinesiology, pathology, clinical medicine, neurology, orthopedics, physiology, physical therapy procedures, administration, and research as well as clinical experience in various hospitals and clinics.

Lecturers and laboratory instructors from Boston University School of Medicine, Tufts–New England Medical Center hospitals, the Beth Israel Hospital, and many

regional hospitals, as well as from medical and social agencies in the Boston area, augment the professional staff in the physical therapy program.

Supervised clinical education is a strong component of the curriculum, and satisfactory completion of it is a requirement for graduation. Clinical experience provides opportunities to practice various facets of physical therapy under supervision in preparation for qualifying as a physical therapist. Assignments in clinical education are not confined to the Boston area. They may include physical therapy departments across the United States.

Students admitted to the Department of Physical Therapy must maintain acceptable standards of scholarship and performance in the prescribed program. They must also demonstrate good health, verbal fluency, essential motor skills, and emotional maturity; they must complete all required courses and have favorable evaluations from clinical education and co-op experience. To continue in the program, students are required to maintain a grade of C or better in all professional courses and in all basic science prerequisite courses listed in the academic policy statement of the Department of Physical Therapy.

To progress into the middler year, students must have completed all freshman and sophomore prerequisite courses, including all basic science and professional courses, with a grade of C (2.0) or better. Physical therapy students may not earn a grade of less than C in more than two professional courses (PTH-prefixed), nor may they more than once earn a grade of less than C in any single professional course, including Supervised Clinical Education.

Students interested in majoring in physical therapy should contact the Department of Physical Therapy for information on departmental academic policies and procedures. Students on clinical education assignments should plan on additional expenses, including travel.

Transfer students from other colleges and universities (external transfers) and from other majors and colleges within Northeastern University (internal transfers) are admitted to the freshman and sophomore years of the physical therapy program based upon academic achievement and the availability of space in a particular graduating class. Consideration will be given to those transfer applicants who have achieved a minimum quality-point average of B (3.0).

■ Sample Freshman-Year Program

First Quarter

Foundations of Psychology I
Fundamentals of Mathematics
Basic Animal Biology I
Current Issues in Health
First Aid

Second Quarter

Functional and Basic Calculus
General Chemistry
Freshman English I
Introduction to Physical Therapy I

Third Quarter

General Chemistry
Basic Animal Biology II
Freshman English II
Beginning Computer Use

Note: In addition to the above courses, students may choose to take Basic ROTC.

■ Basic Course Requirements*

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Fundamentals of Mathematics†	8	Lab: Physics Life Sciences I	1
Basic Animal Biology†	8	Human Physiology I	4
English†	8	Human Physiology II	4
General Chemistry†	10	Human Anatomy‡	4
Current Issues in Health†	4	Foundations of Psychology I†	4
First Aid	2	4 general electives	16
Physics for Life Sciences I	4	Foundations of Psychology II†	4
Physics for Life Sciences II	4	Beginning Computer Use	4

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Introduction to Physical Therapy I†	2	Middler-Year Writing Requirement	1
Introduction to Physical Therapy II‡	2	Physical Therapy V (continued)	1
Perceptual and Motor Development	4	Neuroanatomy	5
Clinical Gross Anatomy	6	Physical Therapy VII	2
Physiology for Physical Therapists	5	Physical Therapy VIII	4
Physical Therapy I	2	Research for Physical Therapy	4
Clinical Medicine I, II, III	10	Psychosocial Aspects of Illness	3
Clinical Kinesiology	5	Physical Therapy in the	
Physical Therapy II	3	Health-Care System	3
Physical Therapy III	4	Supervised Clinical Education II	0
Physical Therapy IV	3	Clinical Seminar	2
Supervised Clinical Education I	5	Administration	4
Physical Therapy V	4	Investigative Studies	6
Physical Therapy VI	3	Functional Assessment of the	
		Elderly Client	3

* Minimum graduation requirement — 175 quarter hours.

† These courses are usually taken in the freshman year.

‡ These courses are usually taken in the sophomore year.

Note: Computer literacy must be demonstrated prior to entering the middler year. The Middler-Year Writing Requirement must be satisfied in the middler year in conjunction with Psychosocial Aspects of Illness.

Human Services

John D. Herzog, Ph.D., *Department of Education, Director and Professor*

Wilfred E. Holton, Ph.D., *Department of Sociology, Director and Associate Professor*

<i>Advisory Committee</i>	Lawrence Litwack, Ed.D.,	Barbara Schram, Ed.D.,
Wilfred E. Holton, Ph.D.,	<i>Counseling Psychology,</i>	<i>Education</i>
<i>Sociology/Anthropology</i>	<i>Rehabilitation, and</i>	Harold S. Zamansky, Ph.D.,
Louise La Fontaine, Ed.D.,	<i>Special Education</i>	<i>Psychology</i>
<i>Counseling Psychology,</i>	Judith A. Moll, M.S.,	<i>Fieldwork Supervisor</i>
<i>Rehabilitation, and</i>	<i>Cooperative Education</i>	Natalie H. Riffin, M.Ed.,
<i>Special Education</i>	Craig Reinerman, Ph.D.,	O.T.R.
	<i>Sociology/Anthropology</i>	

Degree Offered: Bachelor of Science in Education

Human services is an interdisciplinary major involving the Boston-Bouvé College of Human Development Professions and the College of Arts and Sciences.

■ Professional Preparation

This major offers students an interdisciplinary program of preparation for careers in one of the areas broadly defined as the “helping professions.” The human services cur-

riculum affords students the opportunity to acquire fundamental attitudes, knowledge, and skills that may lead to meaningful careers as well as to graduate education in numerous human services specializations.

Students who major in human services through Boston-Bouvé College prepare for jobs in both public and private agencies. Through course work, two quarters of field experience, and co-op jobs, they have the opportunity to explore such areas as case-work in social service and welfare agencies; therapeutic treatment programs in mental health settings; serving deaf clients through the use of American Sign Language; supportive counseling in community health centers; rehabilitation counseling; assisting individuals in sheltered workshops; parole counseling; court liaison work in programs for delinquent youth; staff work in halfway houses, penal institutions, and drug treatment centers; supportive counseling for the mentally retarded; community organizing; services for the aging; administration in human services agencies; and research and evaluation of social programs.

■ The Major

The Human Services Program offers an extensive advisory system to help students make the best use of course opportunities and to guide in the choice of specializations within the major and in career planning.

■ College Requirements

The overall requirements for each participating college differ in certain respects. Refer to pages 53–55 for college requirements in the College of Arts and Sciences, and to page 111 for college requirements in Boston-Bouvé College of Human Development Professions. Students in Boston-Bouvé College complete a five-year cooperative education program. The basic aspects of the program are as follows:

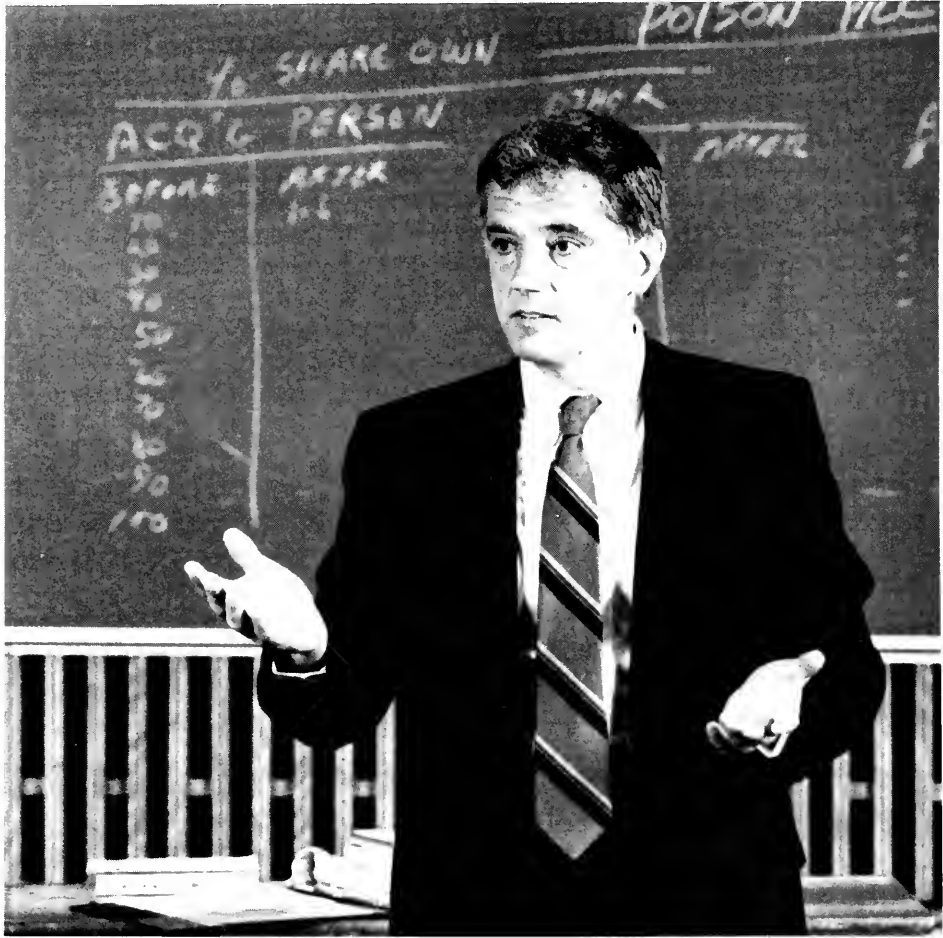
- Prerequisite courses: prescribed courses in sociology, psychology, government, economics, and human services, for a total of six courses.
- Core courses: nine courses in areas including statistics, research methods, group process, organizations, personality, intervention strategies, and a senior seminar.
- Social and community issues: three courses from a list of recommended options in the areas of African-American studies, special education, poverty, or social problems.
- Specializations: a five-course specialization developed in conjunction with an adviser, in a subfield of human services of special interest to the student. Typically, these specializations are in one of three areas: administrative, community, or clinical. Structured specializations have been developed in deaf studies, aging, administration, business, speech and hearing therapy, and other areas. Specific course choices are designed to complement the individual's interests and goals.
- Fieldwork: two mandatory fieldwork placements during the last two years of their program. Students must apply for fieldwork assignments early in the quarter before the fieldwork will be done. Each placement consists of 150 hours on site. The type of placement varies according to the student's interest. In the past, students have found placements in community programs, nursing homes, vocational workshops, state and federal agencies, and recreational facilities. These experiences are supervised by University staff to maximize the student's learning opportunity.

The human services major offers numerous settings in which students may acquire useful skills and basic knowledge relating to various human services fields. Cooperative education job placements provide additional opportunities to put classroom knowledge and personal talents to work and for each student to develop individually and professionally.

Human services students at Northeastern have been very active in their major and helpful to each other. The Human Services Student Organization combines social and career-related activities, which in the past have included open houses, bake sales, clothing drives, meals for the homeless, social activities, day-long conferences, and weekend retreats. A quarterly, *Human Services Newsletter*, is published by students and faculty.

In addition, human services students and faculty are leaders in the Fenway Project, a campus office that recruits, places, and supports student volunteers in social, educational, and recreational agencies in Northeastern's immediate neighborhood. In recent years, Fenway Project volunteers have worked with senior citizens who reside in apartment buildings for the elderly, school-age children from a nearby housing project, patients and staff from a local health clinic, and many other groups. The year culminates in a community fair, the Fenfest, attended by students and permanent residents of the neighborhood. The Fenway Project began in 1973 through the auspices of Boston-Bouvé College and has been administered by the Human Services Program since 1986.

College of Business Administration



David P. Boyd, Ph.D., *Dean*

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Keith B. Murray, Ph.D.
Shubhro Sen, M.S.
Harlan E. Spotts, M.B.A.

Degree Offered: Bachelor of Science in Business Administration

The programs in the College of Business Administration are designed for men and women seeking to prepare themselves for managerial responsibility, whether in business, government, or elsewhere. These programs seek to develop the ability to recognize and solve problems and to understand the role of the business firm in the community, the nation, and the world. In developing these skills, students have the opportunity to gain not only a broad understanding of business and organizational problems through specialized courses but also to observe effective solutions firsthand.

The College of Business Administration offers concentrations in the principal fields of business: accounting, entrepreneurship and small-business management, finance and insurance, human resources management, international business, management, management information systems, marketing, and logistics and transportation.

All concentrations are offered only in the five-year Cooperative Plan of Education, providing most students with substantial practical experience, usually in the fields for which they are preparing.

In keeping with current trends in collegiate education, the college has adopted the following educational aims:

- To develop attitudes and ideals that are ethically sound and socially desirable;
- To cultivate an awareness of the social, political, and economic developments to which the business firm must adapt;
- To develop the habits of accurate thinking that are essential to sound judgment and the habits of accurate expression that are essential to effective communication;
- To provide an opportunity to develop a specialization in business in accordance with interests and talents.

■ The Five-Year Program

The College of Business Administration offers a Bachelor of Science in Business Administration with concentrations of courses in several areas. The college combines its business curriculum with courses from the sciences, humanities, and social sciences. Students must take courses in these areas to ensure the well-rounded background that is so valuable in the business world.

All students in the college are required to complete, in addition to their academic courses, the Cooperative Plan of Education. This program gives students the opportunity to challenge and reinforce in the workplace the theories and techniques learned in the classroom. In a similar way, the “well, that’s the way they do it in my co-op company” attitudes can be and are questioned in the classroom. This double-faceted approach enhances the entire education process. The added experience of co-op work assignments, when combined with course work, offers each student practical exposure to the responsibilities of various administrative positions as well as help in determining the kind of organization in which he or she would like to work. Cooperative work assignments generally are paid, full-time professional positions with organizations in both the profit and not-for-profit private sectors and in government. Work assignments are for six months of each year above the freshman-year level.

After the course-work foundation of the first two years, the final three years emphasize the various functional areas of business and require students to concentrate their studies in specific areas. (Detailed descriptions of these areas follow this section.) In most of these upper-division courses, the traditional lecture-and-recitation format is supplemented by problem solving and case studies. Using these methods, students analyze actual businesses and business problems and present recommendations for possible improvements and solutions. Students are encouraged to develop the ability to think independently, to support ideas with fact and logic, and to analyze and challenge propositions. Special classrooms have been designed for the college to facilitate the case method of instruction.

■ Professional Preparation

For the 1990s, the outlook for exciting careers in business administration is optimistic. The challenges that business faces from the effects of foreign policy, high technology, affirmative-action regulations, and new economic policies tend to create a demand for highly trained individuals equipped to analyze the complex problems of our modern-day economy.

Upon completion of the Bachelor of Science in Business Administration degree, the graduate may choose to enter the work force (many former students have assumed full-time positions with former co-op employers) or go on to pursue higher degrees.

In general, students find that graduate schools view a B.S. degree in business administration as solid preparation for graduate work, not only in business but also in public administration, health-care administration, and education administration. Law schools look favorably on the prelegal background obtained in business school. Although the Association of American Law Schools does not recommend particular courses or curricula for prelegal students, it does advise undergraduates to develop critical understanding of the institutions and values with which the law deals. Many careers in law are directly involved in the business world, either in large corporations or in private practice.

The college’s curriculum offers students the opportunity to develop a broad understanding of the business environment as well as to acquire the specific skills necessary to manage organizations in today’s complex social and legal environment.

■ **Honors Program**

The College of Business Administration participates in the University-wide honors program. For further information, refer to the University Honors Program in the Undergraduate Admissions section on page 16.

■ **Junior/Senior Honors Courses and Thesis Projects**

The College of Business Administration offers academically outstanding junior and senior students the opportunity to participate in a series of specially designed courses and an optional senior thesis project.

■ **The Minor**

The College of Business Administration faculty, realizing that many students may have an interest in business yet major in other disciplines, offers a minor in business administration. The College of Arts and Sciences, which teaches some of the courses, collaborated in the design of the minor.

Students who complete the minor will have a background in disciplines that serve as foundation courses for the study of business and as an exposure to its various functional areas. In addition, there is an exploration of the relationship between business and society and the obligations of each to the other.

Students of the Basic Colleges other than the College of Business Administration may find the minor particularly attractive if they are considering a career in business and/or are contemplating enrolling in an M.B.A. program, but are not sure what is involved in the study of business. Qualified students who have completed the five background and methodology courses apply for formal admission to the minor after they have accumulated eighty or more quarter hours of credit.

■ **Minor in Business Administration Program**

Background and Methodology*

<i>Course</i>	<i>Q.H.</i>
College Algebra	4
Macroeconomics	4
Microeconomics	4
Descriptive Statistics	4
Inferential Statistics	4
Total Quarter Hours	20

Business Functions

<i>Course</i>	<i>Q.H.</i>
Introduction to Business	4
Introduction to Accounting	4
Organizational Behavior	4
Introduction to Finance	4
Introduction to Marketing	4
Operations Management	4
Total Quarter Hours	24

Business and Its Environment

<i>Course</i>	<i>Q.H.</i>
One course from the approved list	4
Total Quarter Hours	4

*Completed prior to formal entry into the minor.

■ **Graduation Requirements**

Candidates for the bachelor of science degree must complete all of the prescribed work of the curriculum in which they seek to qualify. This presently totals 176 quarter hours of credit. The degree conferred not only represents the formal completion of selected courses of study but also indicates professional study in the designated area of concentration. Both an overall average grade of C and a C average in required courses are necessary for graduation.

Students must be enrolled in a full program of studies in the College of Business Administration during the final three quarters immediately preceding graduation.

■ **Graduation with Honors**

Candidates who have achieved superior grades in their academic work will be graduated with honors (cum laude). Upon special vote of the faculty, a limited number of this group may be graduated with high honors (magna cum laude) or with highest honors (summa cum laude). Students must have been in full-time attendance at the University at least six quarters before they can become eligible for honors at graduation. (For quality-point equivalents of these honors, see page 55.)

■ **Accreditation**

The undergraduate program of the College of Business Administration is fully accredited by the American Assembly of Collegiate Schools of Business, indicating that the program meets the accrediting agency's standards for faculty and student quality, curriculum design, and overall University support.

■ **Sample Freshman-Year Program**

The sample freshman-year program and the basic course requirements for the College of Business Administration are the same for all concentration areas.

First Quarter

Introduction to Business
Two nonbusiness electives
Economics (macro)

Third Quarter

Freshman English II
Two nonbusiness electives
Economics (micro)

Second Quarter

Calculus for Business
Freshman English I
Two nonbusiness electives

Note: Students who will complete the Reserve Officers' Training Corps program are permitted to drop one elective each quarter of their senior year. Individual ROTC courses carry no credit toward graduation. The College of Business Administration has no physical education requirement. Students wishing to take courses in physical education may take a maximum of eight quarter hours as elective credits.

■ **Basic Course Requirements**

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Calculus for Business	4	Statistics I and II	8
Quantitative Models in Business English*	4	Computer-based Information Systems	4
Introduction to Business	8	Organizational Behavior	4
Business Communications	4	Complex Organizations	4
Accounting I and II	4	Operations Management	4
Economics (macro)	8	Managing Social Issues	4
Economics (micro)	4	Business Policy	4
Introduction to Finance I and II	4	Nonbusiness electives†	40
Introduction to Marketing	8	Open electives‡	28
	4		

* In addition, all students must complete the Middler-Year Writing Requirement (normally taken by business students in the junior year).

† For international business majors, eight quarter hours of this total must be from the international list. For all other students, four quarter hours must be from the international list.

‡ For accounting concentrators, 24 quarter hours.

Accounting Concentration

Accounting is a fast-growing and critical area of business. It is an exacting field that requires men and women who enjoy dealing with facts and figures as well as with people. It requires accuracy and an ability to reason and to interpret business data.

■ Professional Preparation

A student who anticipates a career in accounting probably is interested in one of its two major areas: industrial accounting or public accounting. To enable such a student to obtain some of the professional background necessary to enter these fields, the College of Business Administration offers a variety of financial accounting and managerial accounting courses.

Preparation for a career in accounting encompasses a broad range of activities. These include all phases of record keeping, internal and external reporting, financial planning, cost control, the design and installation of systems and procedures, the application of electronic and other modern business methods to these activities, and managerial decision making.

■ The Five-Year Concentration

During the first two years, accounting students have the opportunity to develop communicative and analytical abilities, to gain an understanding of the nature of accounting, and to survey business as a dynamic institution in an economic setting. Another important activity will be consultation with a coordinator from the Department of Cooperative Education about future work assignments.

Subjects in the third year will include courses in the various functional areas of business (marketing, finance, operations, personnel), statistical analysis, and economic activity.

Whether a student chooses employment in the industrial accounting or public accounting area, he or she will have the opportunity to prepare through specialized courses in the third and subsequent years. Subjects will include cost accounting, accounting theory, planning and control, auditing, and taxes.

In addition to the sample freshman-year program and basic course requirements listed on page 133, students who concentrate in accounting are required to take the courses below.

■ Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Intermediate Accounting I, II, and III	12	Federal Income Taxes	4
Cost Accounting	4	Auditing	4
Accounting Systems	4		

Entrepreneurship and Small Business Management Concentration

The concentration in entrepreneurship and small business management offers students who plan to work in or operate their own businesses an opportunity to develop skills necessary for the effective management of small enterprises.

■ Professional Preparation

Students who choose this concentration have a wide variety of motivations. Some have hopes of starting, or acquiring, and operating their own businesses. Others may join a family business upon graduation. Still others have views of or experience with large

corporations that have made them think about life in a smaller organization. And some think they would enjoy working for a small company and wish to learn more about opportunities with smaller firms. Finally, in recent years many large corporations have begun to encourage the use of entrepreneurial skills through the development of entrepreneurial programs.

Some students are considering a career in sales management, banking, public accounting, management consulting, or other areas that may involve them directly with owners and managers of new and small companies. For example, a bank loan officer, sales manager, or CPA would often have many entrepreneurs and small-company officers as clients.

A concentration in this field offers a thorough “start-to-finish” perspective. The concentration provides courses that deal with these key questions:

- What are the characteristics of people who start their own companies, and what does it take to start and build a new business?
- What are some key sources of business opportunities, and how does one assess the feasibility of a particular venture?
- What sources exist for raising seed capital, and how does one acquire it?
- What are the critical problems and opportunities in successfully managing a smaller company, and what are the appropriate managerial methods?
- What are the key issues in financing and managing an ongoing, growing venture, and how can these be applied to small businesses?

■ **The Five-Year Concentration**

Courses in this concentration benefit students in several ways. They offer the opportunity to develop an ability to assess personal aptitude and potential for small business, to find and evaluate business opportunities, to secure adequate funding, and to organize and manage the various functional facets of the small business—manufacturing, marketing, finance, control, and personnel.

The freshman-year program of studies and the basic course requirements for the College of Business Administration are the same for all the concentration areas. (See page 133.)

■ **Professional Requirements**

<i>Course</i>	<i>Q.H.</i>
Management of Smaller Enterprises	4
Opportunity Analysis and Venture Capital	4
Small Business Finance	4
New Venture Creation	4
Small Business Institute Field Project	8

Finance and Insurance Concentration

The objective of the finance and insurance concentration is to train students for the financial management of businesses, nonprofit organizations, and governmental units. Preparation is twofold:

- Students are offered information about current practices, theories, and concepts of financial management;
- They have the opportunity to gain experience in analyzing situations that require financial decisions.

■ Professional Preparation

Almost every phase of economic activity involves aspects of financial management—of cash or other funds and of economic resources available to the individual, business, or any other economic unit.

The finance and insurance concentration can help prepare students for careers in one of the many areas of funds management: security analysis, estate planning, corporate finance and control, financial planning, security or insurance brokerage, underwriting, credit management, and banking.

There are also career possibilities in the specific financial institutions that perform indispensable services for present-day business and industry. Among these are banks, insurance companies, investment houses, credit concerns, financial service institutions, mortgage companies, and national and local real estate brokerage firms and appraisers.

Career openings can be sought in all areas of business, industry, and government, where financial planning and operation are vital.

■ The Five-Year Concentration

In the middler year, students take Introduction to Finance I and II and beginning courses in other business fields. Following the introductory courses, the required courses are Managerial Finance, Investment Management, and Financial Institutions and Markets. Electives are available, grouped within six subfields: Managerial Finance, Investment Management, Management of Financial Institutions, Insurance, Real Estate, and Personal Financial Planning.

All courses offered in finance and insurance are open to students in any concentration within the College of Business Administration provided they have taken the prerequisite subjects. Instructors may waive prerequisite courses in special circumstances.

Managerial Finance Specialization The two objectives of the finance function in the contemporary corporation or business entity are to:

- Provide needed funds on terms that are the most favorable in view of current planning;
- Regulate the flow of funds to maximize the realization of objectives.

The key concerns of financial management are the capital structure of the business and the optimal manner in which its assets should be held. With only minor differences, these same broad objectives apply to the finance function of nonprofit organizations, including those in the public sector (units of government).

Management of Financial Institutions Specialization This specialization is broadly based within the subject area and is applicable to a variety of financial institutions and positions within them.

The three major topics of consideration in this area of specialization are:

- The institutional structure of the financial system and the relation between it and the surplus and deficit units of the whole economy;
- Asset, liability, and capital management problems of financial intermediaries;
- Investment analysis and portfolio management policies appropriate to different financial intermediaries.

Investment and Management Analysis Specialization Two benefits result from studying this specialization. First, students can gain a general understanding, which may help them manage their own affairs. Second, those seeking professional careers in organizations where the investment function is paramount (for example, industrial and utility corporations, real estate developments, financial institutions, and many governmental agencies) will find this specialization of great assistance.

The specialization offers preparation in the skills and principles that can benefit students who are interested in careers as investment managers or security analysts in the following organizations:

- Stock exchanges, investment advisory firms, brokers-dealers, underwriters, mutual funds, and other investment companies that are a part of the securities markets;
- Insurance companies, commercial banks, savings and loan associations, trust companies, mutual savings associations, and organizations involved in the activities of the securities markets;
- Federal and state governmental agencies such as the SEC, FDIC, Treasury Department, IRS, and others having regulatory responsibilities regarding the securities markets and their participants.

Insurance and Risk Management Specialization Risk management is the process of identifying, measuring, evaluating, and treating important risks. It is a relatively new, but growing, part of the management function in business as well as in government and other non-profit organizations. Insurance is an important method of risk financing in all organizations, including the family unit. Some individuals may study one or a few courses in insurance and risk management to broaden their understanding of this area in order to manage their personal affairs better or to familiarize themselves with this area as part of their general management preparation. Others may wish to specialize in this area and seek careers in the risk management function in business as managers of corporate employee benefits programs; or as managers, adjusters, or underwriters in life insurance companies, property and liability insurance companies, insurance brokerage firms, insurance agencies, and independent adjusting firms; or in a number of other careers in this vast field.

Real Estate Specialization The real estate specialization exposes students to the criteria, objectives, and risks of investments in real estate. The uncertain economic environment of the last decade has made this specialization particularly attractive. Topics include legal and financial considerations, internal and external factors determining site use, macro- and microeconomic analysis, and federal income tax implications.

Specialization in this subfield prepares the student for opportunities in equity investment organizations, real estate marketing organizations, mortgage banking associations, and primary mortgage lending sources (life insurance companies, real estate investment trusts, commercial and mutual savings banks, pension funds, and trust departments).

Personal Financial Planning Specialization Deregulation of the financial sector has caused the number and complexity of investment alternatives to increase, making personal financial management a growth specialization. Various financial institutions require individuals to evaluate the financial needs of the investor and to create a portfolio of direct and indirect investments. In addition, any individual with financial assets needs some knowledge of the personal financial management process to better meet his or her financial needs over time. Topics in this specialization include portfolio analysis, insurance, real estate, and personal financial management.

Individuals who specialize in this subfield may work as financial planners for such financial institutions as commercial banks, savings and loan associations, savings banks, life insurance companies, trust departments, and financial planning companies.

The freshman-year program of studies and the basic course requirements for the College of Business Administration are the same for all areas of concentration. (See page 133.)

■ Professional Requirements

<i>Course</i>	<i>Q.H.</i>
Managerial Finance	4
Financial Institutions and Markets	4
Investment Management	4
Finance electives	12

Human Resources Management Concentration

Human resources management, which focuses on the effective utilization of people at work, is an extension of personnel and labor relations. However, it includes more than the traditional areas of employee relations, recruitment, selection, compensation, and training. A human resources manager also must be knowledgeable about manpower planning, equal employment opportunity laws and affirmative-action procedures, organizational development, career planning, job design and motivation, leadership, and communications. The ultimate goal of human resources managers is to provide their organizations with highly effective employees.

■ Professional Preparation

In recent years increased attention has been paid to the quality of the employee's work life and its relation to the efficient production of goods and services. At a time when financial resources and investment capital are becoming scarcer, many organizations are beginning to take a closer look at the management of their people, their most precious resource. In recognition of this growing interest, Northeastern University's College of Business Administration offers an undergraduate concentration in human resources management.

The effective management of human resources calls for a partnership among such organizational specialists as personnel administrators, labor relations negotiators, wage and salary analysts, and operating line managers in the various functional areas (marketing, finance, production) of the company. As the traditional role of personnel administration is expanded to include affirmative-action programs, job enrichment, and organizational development activities, career opportunities in the fields of labor relations and personnel administration are likely to expand in both the public and private sectors.

Students whose career aspirations lie in fields other than personnel and labor relations should not think of human resources management as a specialized activity confined to the personnel department. Whether a graduate starts his or her career as a work-flow analyst in manufacturing, a customer service assistant in marketing, a field auditor in an accounting department, or a hospital unit manager, he or she will be required to demonstrate skills in working with individuals and groups to achieve desired results.

■ The Five-Year Concentration

Human resources management is practiced not only by specialists in the area of personnel and labor relations, but also by line managers and specialists in many other business areas. The human resources management concentration is structured to expose students to all major functions of personnel administration and labor relations.

The freshman-year program of studies and the basic course requirements for the College of Business Administration are the same for all the concentration areas. (See page 133.)

■ **Professional Requirements**

<i>Course</i>	<i>Q.H.</i>
Introduction to Human Resources Management	4
Selection and Performance Appraisal	4
Contemporary Labor Issues	4
Reward and Compensation Systems	4
Human resources management electives	8

International Business Concentration

The recent growth of multinational firms, international trade, and regional international trading blocs has created a shortage of skilled managers who are equipped to analyze the complexities of international business problems.

Careers in international business are best pursued in companies that carry on service, trade, or manufacturing operations in foreign countries. An increasing number of multinational firms require that candidates for their top management positions have prior experience in international operations. In addition, large banks and insurance companies want their managers to understand international business. Other types of organizations—government, trade associations, and transnational bodies—require international business knowledge. Foreign travel is frequently a part of the job.

■ **Professional Preparation**

The international business concentration offers students the opportunity to prepare themselves to meet these management needs. It offers the opportunity to develop an understanding of problems involved in operating business enterprises across national boundaries and to develop the ability to analyze the operations of businesses in multinational environments.

■ **The Five-Year Concentration**

The curriculum consists of a broad education provided by course requirements in arts and sciences, a basic business education provided by business administration core requirements, and a specialized education in international business.

The international business concentration consists of six courses. Three of them are required: Introduction to International Business, International Financial Markets, and Seminar in International Business. There are also three electives, two from the international business list and one from the business list. In addition, two of the nonbusiness electives in the basic course requirements must be chosen from the international list. (See page 140.)

The international business concentration permits a dual concentration. For example, a student may concentrate in international business and use open electives to fulfill the requirement of a second concentration. The dual concentration has advantages for those seeking employment opportunities in traditional functional areas (production, marketing, finance), which also take place in an international setting. All College of Business Administration courses offered as part of the international business concentration are available to students in other concentrations during their middler, junior, and senior years.

Students who choose the international business concentration have the opportunity to gain an understanding of the economic, political, and social constraints on international business and to develop skills in analyzing the financial, marketing, and operational strategies of the multinational firm.

Arts and sciences electives such as modern languages, political science, international economics, geography, cultural anthropology, and history—all appropriate to the

understanding of international relations—are highly recommended to complement this concentration.

The freshman-year program of studies and the basic course requirements for the College of Business Administration are the same for all the concentration areas. (See page 133.)

■ Professional Requirements

<i>Course</i>	<i>Q.H.</i>
Introduction to International Business	4
International Financial Markets	4
Seminar in International Business	4
Business international electives	8
Business elective	4

■ International Electives

Business List*

Comparative International Management
Cultural Aspects of Business
Environmental Pressures and Corporations
International Finance
International Financial Markets
International Human Resources Management
International Labor Relations
International Marketing
International Transportation

Nonbusiness List†

Africa Today
American Foreign Policy
Arab-Israeli Conflict
Business German, French, and Spanish
China's Foreign Relations
Communism in Eastern Europe
Communism and Revolution
Comparative Economics
Contemporary Japanese Society and Culture
Development Economics
Economic History of Less Developed Countries
Economics of World Energy
Euro-Communism

Europe Since 1921
European Economic Development
European Political Parties
Government and Politics in the Middle East
Government and Politics of China
Government and Politics of Japan
Government and Politics of Latin America
History of Modern Italy
International Economics
International Law
International Organization
Introduction to Foreign Governments
Introduction to International Relations
Introduction to the Third World
Modern African Civilization
Modern France
Modern Western Economic History
Peoples and Culture of China
The Politics—Policies of Developing Nations
Social Change and Economic Development
Soviet Foreign Policy
Soviet Government
Soviet Russia
Third World Political Relations
World Politics

Logistics and Transportation Concentration

Logistics and transportation is an integral part of national and international distribution systems. It is a determining factor in the availability and prices of goods and services in our economy.

■ Professional Preparation

In corporate distribution, transportation specialists operate within a complex organizational framework in which goods are stored and moved. Effective management of this distribution process involves understanding inventory control, warehousing, transportation options, and the interaction of these activities with other functional operations.

* These courses are not offered every year. Students are advised to consult preregistration material.

† This is a representative listing; other liberal arts courses may be taken upon approval of the area coordinator for the international business concentration.

Growing concern with the economic and service conditions of the transportation industry has also created career positions with government agencies engaged in transportation policy development and administration. Other career possibilities can be sought with carriers such as airlines, railroads, and trucking companies, which actively seek people familiar with the operational and regulatory aspects of their business. The logistics and transportation concentration helps students to prepare for these diverse career opportunities.

■ **The Five-Year Concentration**

The concentration offers students a balanced background in logistics and transportation. Courses cover not only the viewpoint of the corporate shipper and carriers but also that of public officials, in addition to consumer interests. Courses have a strong contemporary orientation and promote frequent interaction with practitioners from business and government.

Course offerings in transportation and physical distribution management are sequential so that students who desire only an introductory exposure may take one or several courses as part of a broader business background. An undergraduate concentration in the area consists of six courses. Three are required courses, with the balance of the concentration composed of electives.

The freshman-year program of studies and the basic course requirements for the College of Business Administration are the same for all the concentration areas. (See page 133.)

■ **Professional Requirements**

<i>Course</i>	<i>Q. H.</i>
Domestic Transportation System	4
Corporate Transportation/Logistics	4
Seminar in Transportation and Distribution	4
Transportation electives	12

Management Concentration

Management is an area of business that involves men and women who enjoy working with numbers as well as people. Basically, it is the process of getting things done through people by using basic business skills developed in a well-rounded program of business administration.

■ **Professional Preparation**

For the student whose career interests lie in the broad area of administration rather than in specialized fields, the management concentration offers the opportunity to prepare for a wide variety of administrative careers in business, in government, and in nonprofit institutions.

■ **The Five-Year Concentration**

Management students must have a basic understanding of all organization functions: accounting, marketing, finance, and operations. Courses in these subjects offer an overview, including the interrelation of these areas and the ways they can be used as management tools. For example, knowledge of accounting can be a helpful tool in the decision-making process rather than only a specialty. A similar approach is used in courses in other areas. Professors pay significant attention to “people problems” to stress the importance of developing an effective work force.

The courses in the management concentration vary considerably in content and

method of instruction because they vary in objectives. In most, students are heavily involved in the conducting of classes and are required to work on group assignments. The purpose of this participatory approach is to help prepare students for the demands of management in the business community.

The curriculum and teaching methods center around the development of basic skills and knowledge appropriate to administration, rather than on specialized functional techniques. Although the case study method is used extensively, a variety of teaching methods consistent with particular course objectives is employed. The basic objectives of the concentration are to confront students with appropriate learning experiences, to help increase students' skills in and knowledge of basic disciplines underlying administrative practice, and to help students develop judgment and skills in organizational problem analysis and decision making.

The freshman-year program of studies and the basic course requirements for the College of Business Administration are the same for all the concentration areas. (See page 133.)

■ Professional Requirements

<i>Course</i>	<i>Q. H.</i>
Cost Accounting for Management	4
Introduction to Human Resources Management	4
Legal Aspects of Business	4
Business electives	12

Management Information Systems Concentration

■ Professional Preparation

The growth in the application of information technology in organizations is one of the most remarkable features of the twentieth century. No longer are computers placed behind glass walls to be approached only by a handful of cognoscenti. Now hardware and software are found in all corners of organizations, and the proliferation shows no signs of slowing down. Familiarity with this technology is necessary for any position in an organization.

The Management Information Systems (MIS) concentration has been created to teach tomorrow's managers how to use information technology to its fullest potential in performing their duties. Students who elect this concentration will probably not compete with graduates of computer science or industrial engineering/information systems degree programs. Nor would they be expected to become analyst/programmers. Instead, they will most likely move into one of the functional areas of management and use their MIS skills in linking their functional area with the information systems resources of their firms. Because of this, students interested in an MIS concentration are encouraged to consider working toward a second concentration in one of the functional areas of management. A related career path would be to assume an information systems/functional area interfacing role, but from the perspective of an information systems department rather than a functional area. Many other careers are also possible in this rapidly expanding field.

■ The Five-Year Concentration

The proliferation of information systems technology may be viewed as taking two distinct tracks. The first builds on the historical development of large and powerful computers that carry out organization-wide tasks, such as database management. The second track is the more recent one. Beginning with the appearance of time-sharing

systems in the late 1960s and culminating in the personal computer revolution of the 1980s, this track deals with the direct linkage of decision makers with user-friendly computer facilities. This second track is often referred to as end-user computing.

The MIS concentration provides the student with background in both of these tracks as well as in the complex issues of the integration of information technology with corporate strategy.

The MIS concentration is composed of six courses. Two are taken in each of the middler, junior, and senior years. The freshman-year program of studies and the basic course requirements for the College of Business Administration are the same for all concentration areas. (See page I33.)

■ **Professional Requirements**

<i>Course</i>	<i>Q. H.</i>
End-User Computing	4
Business Programming I	4
Business Programming II	4
Systems Analysis and Design	4
Database Management Systems	4
Management Information Systems	4

Marketing Concentration

A business organization not only designs and manufactures products but also markets and sells them to manufacturers, wholesalers, retailers, and consumers. The marketing concentration focuses on these processes.

All the business activities that direct the flow of goods and services from producer to consumer are classified as marketing concerns. The marketing process begins by determining the needs and wants of customers. Once these wants and needs are established, the organization's first objective is to produce goods or services to satisfy a particular consumer. Essential in all types of business are such activities as product design, research, pricing, packaging, transportation, advertising, selling, and servicing. The overall responsibility for these functions rests with the marketing manager.

Without successful marketing, industrial and consumer products remain unsold. More and more companies are finding that today's tempo of progress and high levels of production require up-to-date marketing techniques to generate higher sales volumes.

■ **Professional Preparation**

Students of marketing can choose career options in a range of settings—in the public and private sectors of the economy, in product or service marketing, in profit or not-for-profit organizations—as well as in a variety of support functions, such as market research, consulting, advising government regulators, advertising, and new product development.

■ **The Five-Year Concentration**

The marketing concentration offers a wide range of courses, taught by lecture and class discussion. Included are such courses as Marketing Management, Advertising, Sales Management, Consumer Behavior, Competitive Strategy, and Marketing Research Management.

Outside the classroom, students may attend weekly meetings of the American Marketing Association student chapter, through which they may discuss issues with leaders in the field.

As members of the management policy group, marketing executives take a broad

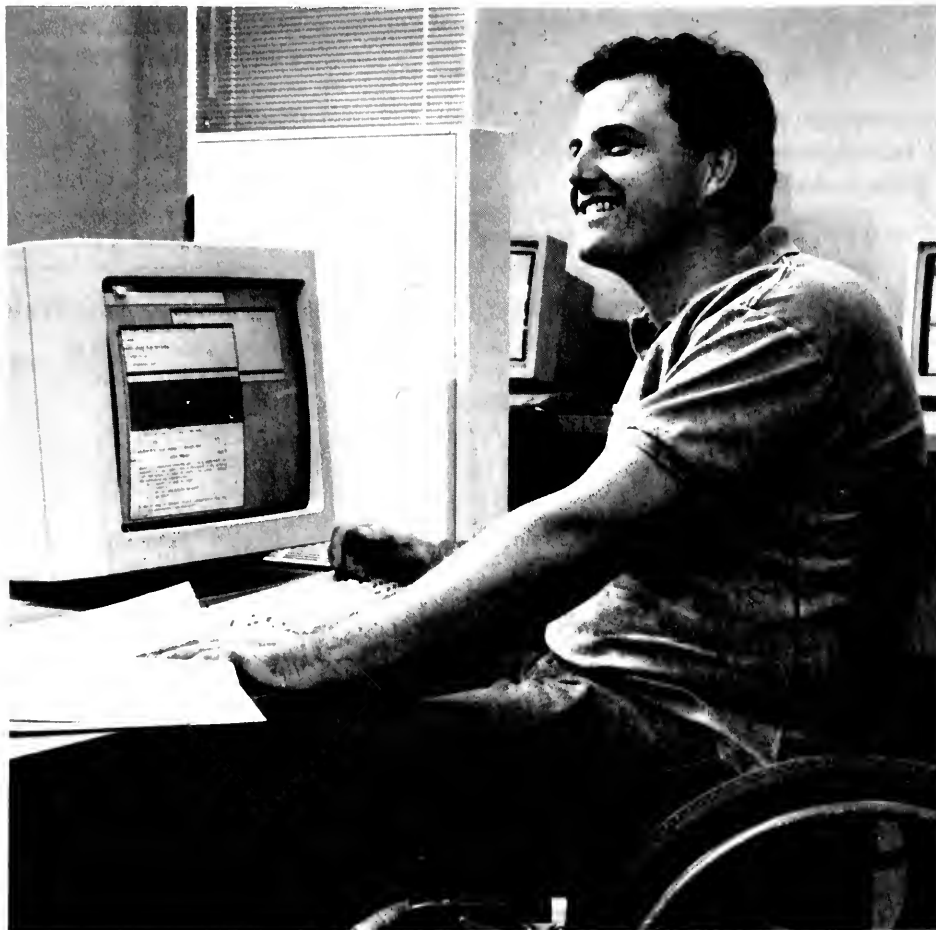
view of all aspects of business management and policy. They also serve effectively as trained specialists in their own areas.

The freshman-year program of studies and the basic course requirements for the College of Business Administration are the same for all the concentration areas. (See page 133.)

■ **Professional Requirements**

<i>Course</i>	<i>Q.H.</i>
Domestic Transportation System	4
Corporate Transportation/Logistics	4
Seminar in Transportation and Distribution	4
Transportation electives	12

College of Computer Science



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Mitchell Wand, Ph.D., *Associate Dean and Director of Graduate Studies*

Richard A. Rasala, Ph.D., *Director of Undergraduate Studies*

Terry M. Smith, M.S., *Coordinator of Undergraduate Student Services*

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Frank R. Campagnoni,
Ph.D.
Philip F. Carrigan, Ph.D.
John M. Gauch, Ph.D.
Andrew M. Klapper, Ph.D.
Luc Longpré, Ph.D.

Degrees Offered: Bachelor of Arts, Bachelor of Science in Computer Science

Computer science is a multifaceted discipline. It spans parts of pure mathematics and applied mathematics; it touches physics through solid state devices; it pushes at the borders of biology and psychology in its attempts to understand and replicate intelligence. It shares much common ground with electrical engineering in the study of computer architectures and the complexity of VLSI design, and, finally, it supports business and commerce with the tools of database and information systems and computer graphics.

In spite of the diversity of interests within the discipline, computer science may be broadly subdivided into four areas.

Applications This area focuses on the creation of the software that makes computers useful. Instruction and research projects are devoted to the development of applications software. Expert systems, database systems, computer graphics, symbolic computation, computer-aided instruction, and numerical simulations are only a few of the many specific applications areas.

Systems This area centers on the design of the large-scale programs that are the software core of a functioning computer—operating systems, programming languages, compilers, debuggers, and editors. Additional areas of interest in systems are artificial intelligence, networks, parallel processing, compiler design, and software engineering.

Theory This area deals with the design and analysis of algorithms, building and testing large programs, design of programming languages, and development of tools to handle concurrent processes, parallel computation, and networks. The specific areas of interest in theoretical computer science are algorithms for artificial intelligence systems, networks and parallel computation, cryptography, graph theory, and program verification.

Technology This area focuses on the identification of appropriate machine architecture for each of the interests discussed. The actual design of hardware is clearly left to engineering departments and to industrial hardware designers.

■ **Program Accreditation**

The Bachelor of Science in Computer Science Program of the College of Computer Science has been accredited by the Computer Science Accreditation Commission of the Computing Sciences Accreditation Board, Inc. The board was established by the Association of Computing Machinery (ACM) and the Computer Society of the Institute of Electrical and Electronic Engineers (IEEE-CS), the two largest membership societies specializing in computing and related areas.

■ Professional Preparation

The College of Computer Science program is designed for students who seek preparation for careers in industry, government, or other organizations that design, develop, market, or utilize computing systems. Some students may become software designers, systems analysts, business or scientific applications programmers, marketers or salespersons of technologically advanced products; others may become entrepreneurs and founders of their own firms. A fundamental goal of the college is to help students develop the ability to recognize and solve problems arising in the use of modern digital computers.

In developing the skills necessary to achieve this goal, students have the opportunity to assimilate ideas and concepts from theoretical studies; to engage in in-depth, hands-on programming of both large time-sharing systems and single-user microcomputers; and to develop professional insight gained from the cooperative education experience.

Bachelor of Arts in Computer Science Program

The Bachelor of Arts in Computer Science is a new program intended to provide a place for students who want a strong foundation in computer science along with the breadth of a liberal arts education. A Five-Year Cooperative Program and a Four-Year Co-op Option are available. This program allows students to pursue, in depth, an additional field other than computer science. The liberal arts component of the program follows the core curriculum that is in place in the College of Arts and Sciences (see page 54). For information about the computer science component of the program, contact the Department of Undergraduate Admissions or the College of Computer Science.

Bachelor of Science in Computer Science Program

The primary goal of the College of Computer Science is to graduate software professionals educated over a broad range of both technical and nontechnical disciplines. The college's undergraduate curriculum is a five-year cooperative education program that incorporates alternating periods of classroom instruction and career-oriented work experience extending from the second through the fifth year. A student normally spends eleven quarters at Northeastern and seven quarters on co-op assignments.

In the lower-level part of the curriculum, the student is introduced to problem solving and software design methodology, using both high-level programming languages and assembly language. The use of appropriate algorithms and data structures is emphasized. Simultaneously, the student studies one of the sciences and learns analytical skills through calculus and discrete mathematics.

In the upper level of the curriculum, the student studies computer architecture, operating systems, database systems, compiler design, computer graphics, artificial intelligence, and advanced analytical techniques.

To provide the student with a deeper understanding of at least one major area of the discipline, the upper-level curriculum contains "emphasis" tracks, three-course sequences spanning one subject area. These tracks provide an in-depth introduction to the specific area and culminate in a software project on the application of theoretical concepts to practical situations. All students must complete at least one track in order to graduate. Current emphasis tracks cover database management, programming languages, and operating systems.

The curriculum also requires that a student take courses in the humanities and social sciences, the societal impact of computing, and technical writing skills. To broaden his or her horizons further, the student is required to take a subarea of study (a block of five courses within a single discipline).

■ Sample Program for June 1990 Graduates

First Year

First Quarter

<i>Course</i>	<i>Q.H.</i>
Pascal I	4
Calculus I	4
Freshman Writing	4
Western Civilization I	4

Third Quarter

<i>Course</i>	<i>Q.H.</i>
Data Structures	4
Calculus III	4
Introduction to Literature	4
Physics I	4
FORTRAN Language Laboratory	1

Second Quarter

<i>Course</i>	<i>Q.H.</i>
Pascal II	4
Calculus II	4
Discrete Mathematics I	4
Western Civilization II	4
COBOL Language Laboratory	1

■ Basic Course Requirements for June 1990 Graduates

Second Year

Fourth Quarter

<i>Course</i>	<i>Q.H.</i>
Functional Programming and Applications	4
Computer Organization and Programming I	4
Physics II	4
Calculus IV	4
C Language Laboratory	1

Fifth Quarter

<i>Course</i>	<i>Q.H.</i>
Computer Organization and Programming II	4
Software Design and Development	4
Physics III	4
Discrete Mathematics II	4

Third Year

Sixth Quarter

<i>Course</i>	<i>Q.H.</i>
Computer Organization and Design I	4
Linear Algebra	4
Elective/subarea (1)	4
Computer science elective (1)	4

Seventh Quarter

<i>Course</i>	<i>Q.H.</i>
Computer Organization and Design II	4
Probability	4
Technical Writing	4
Computer science elective (2)	4

Fourth Year

Eighth Quarter

<i>Course</i>	<i>Q.H.</i>
Computers and Society	4
Elective/subarea (2)	4
Computer science elective (3)	4
Computer science elective (4)	4

Ninth Quarter

<i>Course</i>	<i>Q.H.</i>
Elective/subarea (3)	4
Elective/subarea (4)	4
Computer science elective (5)	4
Computer science elective (6)	4

Fifth Year

Tenth Quarter

<i>Course</i>	<i>Q.H.</i>
Computer science elective (7)	4
Elective/subarea (5)	4
Elective/subarea (6)	4
Elective/subarea (7)	4

Eleventh Quarter

<i>Course</i>	<i>Q.H.</i>
Computer science elective (8)	4
Computer science seminar	4
Elective/subarea (8)	4
Elective/subarea (9)	4
Elective/subarea (10)	4

Note: Three of the computer science electives must form a complete track, as below.

Database track: File Structures, Database Management I, Database Management II.

Systems track: Systems Programming, Operating Systems I, Operating Systems II.

Programming Languages track: Automata and Formal Languages, Compiler Design I, Compiler Design II.

■ Sample Program for June 1991 Graduates

First Year

First Quarter

<i>Course</i>	<i>Q.H.</i>
Fundamentals of Computer Science	4
Calculus I	4
Freshman English	4
Western Civilization I	4

Third Quarter

<i>Course</i>	<i>Q.H.</i>
Algorithms and Data Structures II	4
Calculus III	4
Introduction to Literature	4
Physics I	4
Physics Laboratory I	1

Second Quarter

<i>Course</i>	<i>Q.H.</i>
Algorithms and Data Structures I	4
Calculus II	4
Discrete Mathematics I	4
Western Civilization II	4
COBOL or FORTRAN Language Laboratory	1

■ Basic Course Requirements for 1991 Graduates

Second Year

Fourth Quarter

<i>Course</i>	<i>Q.H.</i>
Computer Organization and Programming I	4
Physics II	4
Physics Laboratory II	1
Calculus IV	4
Elective/subarea (1)	4

Fifth Quarter

<i>Course</i>	<i>Q.H.</i>
Computer Organization and Programming II	4
Physics III	4
Discrete Mathematics II	4
C Language Laboratory	1
Elective/subarea (2)	4

Third Year

Sixth Quarter

<i>Course</i>	<i>Q.H.</i>
Functional Programming and Applications	4
File Structures*	4
Computer Organization and Design I	4
Elective/subarea (3)	4

Seventh Quarter

<i>Course</i>	<i>Q.H.</i>
Software Design and Development	4
Automata Theory	4
Computer Organization and Design II	4
Technical Writing	4

Fourth Year

Eighth Quarter

<i>Course</i>	<i>Q.H.</i>
Systems Programming*	4
Linear Algebra	4
Computer science elective (1)	4
Computers and Society	4

Ninth Quarter

<i>Course</i>	<i>Q.H.</i>
Probability	4
Computer science elective (2)	4
Elective/subarea (4)	4
Elective/subarea (5)	4

Fifth Year

Tenth Quarter

<i>Course</i>	<i>Q.H.</i>
Computer science elective (3)	4
Computer science elective (4)	4
Elective/subarea (6)	4
Elective/subarea (7)	4

Eleventh Quarter

<i>Course</i>	<i>Q.H.</i>
Computer science elective (5)	4
Computer science seminar	1
Elective/subarea (8)	4
Elective/subarea (9)	4
Elective/subarea (10)	4

* A student wishing to complete the systems track may reverse the order of these two courses.

Note: Three of the computer science electives must form a complete track, as below.

Database track: File Structures, Database Management I, Database Management II.

Systems track: Systems Programming, Operating Systems I, Operating Systems II.

Programming Languages track: Automata and Formal Languages, Compiler Design I, Compiler Design II.

■ Sample Program for June 1992 and Later Graduates

First Year

First Quarter		Third Quarter	
Course	Q.H.	Course	Q.H.
Fundamentals of Computer Science	4	Algorithms and Data Structures II	4
Calculus I	4	Calculus III	4
Freshman Writing	4	Introduction to Literature	4
Western Civilization I	4	Elective/subarea (1)	4
Computer Science Overview I	1	Computer Science Overview III	2
		FORTTRAN Language Laboratory	1
Second Quarter			
Course	Q.H.		
Algorithms and Data Structures I	4		
Calculus II	4		
Discrete Mathematics I	4		
Western Civilization II	4		
Computer Science Overview II	1		
COBOL Language Laboratory	1		

Note: Take either COBOL or FORTRAN laboratory.

■ Basic Course Requirements for June 1992 and Later Graduates

Second Year

Fourth Quarter		Fifth Quarter	
Course	Q.H.	Course	Q.H.
Computer Organization and Programming I	4	Computer Organization and Programming II	4
Calculus IV	4	Discrete Mathematics II	4
Elective/subarea (2)	4	Elective/subarea (3)	4
Physics I	4	Physics II	4
Physics Laboratory I	1	Physics Laboratory II	1
		C Language Laboratory	1

Third Year

Sixth Quarter		Seventh Quarter	
Course	Q.H.	Course	Q.H.
Functional Programming and Applications	4	Automata Theory	4
File Structures*	4	Computer Organization and Design II	4
Computer Organization and Design I	4	Technical Writing	4
Physics III	4	Elective/subarea (4)	4

Fourth Year

Eighth Quarter		Ninth Quarter	
Course	Q.H.	Course	Q.H.
Systems Programming*	4	Software Design	4
Computer Science elective (1)	4	Probability	4
Linear Algebra	4	Computer Science elective (2)	4
Computers and Society	4	Elective/subarea (5)	4

Fifth Year

Tenth Quarter

Course

Computer Science elective (3)
Computer Science elective (4)
Elective/subarea (6)
Elective/subarea (7)

Q.H.

4
4
4
4

Eleventh Quarter

Course

Computer Science seminar
Computer Science elective (5)
Elective/subarea (8)
Elective/subarea (9)
Elective/subarea (10)

Q.H.

1
4
4
4
4

* A student wishing to complete the systems track may reverse the order of these two courses.

Note: Three of the computer science electives must form a complete track, as below.

Database track: File Structures, Database Management I, Database Management II.

Systems track: Systems Programming, Operating Systems I, Operating Systems II.

Programming Languages track: Automata and Formal Languages, Compiler Design I, Compiler Design II.

■ Co-op Plan for the Computer Science Five-Year Program

In these schedules, quarters with numbers mean quarters in school at Northeastern.

Co-op and vacation quarters are indicated explicitly.

Five-year students have a common freshman schedule. At the option of the student, the vacation may be used as an additional co-op quarter.

	Fall	Winter	Spring	Summer
<i>Freshman</i>	1	2	3	vacation

After the freshman year, students are divided into two divisions and follow one of the two schedules below:

	Fall	Winter	Spring	Summer
<i>Sophomore</i>	4	co-op	5	co-op
<i>Middler</i>	co-op	6	co-op	7
<i>Junior</i>	8	co-op	9	co-op
<i>Senior</i>	co-op	10	11	—

	Fall	Winter	Spring	Summer
<i>Sophomore</i>	co-op	4	co-op	5
<i>Middler</i>	6	co-op	7	co-op
<i>Junior</i>	co-op	8	co-op	9
<i>Senior</i>	10	co-op	11	—

■ Honors Program

The College of Computer Science participates in the University-wide honors program. For further information, please refer to the University Honors Program in the Undergraduate Admissions section on page 16.

■ The Minor

The College of Computer Science offers a minor for those students who have an interest in computer science but wish to major in another discipline. The program has been designed to provide a solid foundation. After completing four required level-one courses, students may take three additional computer science courses to develop a broader knowledge of the discipline. Students of the other Basic Colleges may find the minor particularly attractive when seeking positions where a familiarity with computer science concepts and techniques is desirable. Faculty approval is required.

The Four-Year Co-op Option

College of Computer Science students who wish to complete their undergraduate degree in four years may choose the four-year co-op option. With a curriculum identical to the five-year program, this option offers participating students four quarters of cooperative education experience.

■ Sample Four-Year Program for June 1993 and Later Graduates

First Year

First Quarter		Third Quarter	
<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Calculus I	4	Algorithms and Data Structures II	4
Fundamentals of Computer Science	4	Calculus III	4
Computer Science Overview I	1	FORTTRAN Language Laboratory	1
Freshman English I	4	Freshman English II	4
Basic Social Science (1)	4	Elective/subarea (1)	4
Second Quarter			
<i>Course</i>	<i>Q.H.</i>		
Algorithms and Data Structures I	4		
Calculus II	4		
Computer Science Overview II	1		
Discrete Structures	4		
Basic Social Science (2)	4		

Second Year

Fourth Quarter		Sixth Quarter	
<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Computer Organization and Programming I	4	Automata Theory	4
Calculus IV	4	C Language Laboratory	4
Physics I	4	Probability	4
Physics Laboratory I	1	Elective/subarea (4)	4
Elective/subarea (2)	4	Elective/subarea (5)	4
Fifth Quarter			
<i>Course</i>	<i>Q.H.</i>		
Computer Organization and Programming II	4		
Discrete Structures II	4		
Physics II	4		
Physics Laboratory I	1		
Elective/subarea (3)	4		

Third Year

Seventh Quarter		Ninth Quarter	
<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Digital Computers I	4	Computer Science elective (1)	4
Functional Programming and Applications	4	Linear Algebra	4
Physics III	4	Software Design	4
Systems Programming*	4	Elective/subarea (7)	4
Eighth Quarter			
<i>Course</i>	<i>Q.H.</i>		
Digital Computers II	4		
Computer Science elective (2)	4		
Technical Writing	4		
Elective/subarea (6)	4		

Fourth Year

Tenth Quarter		Eleventh Quarter	
<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Computers and Society	4	Senior Seminar	1
Computer Science elective (3)	4	Computer Science elective (3)	4
File Structures*	4	Computer Science elective (5)	4
Elective/subarea (8)	4	Elective/subarea (9)	4
		Elective/subarea (10)	4

* These courses may be switched.

Note: These are the co-op assignments for this sample program.

Six-month: Summer of freshman year through fall of sophomore year.

Three-month: Winter of junior year.

Three-month: Winter of senior year.

■ **Co-op Plan for the Computer Science Four-Year Option**

In this schedule, quarters with numbers represent quarters in school at Northeastern.

Co-op and vacation quarters are indicated explicitly.

	Fall	Winter	Spring	Summer
<i>Freshman</i>	1	2	3	co-op
<i>Sophomore</i>	co-op	4	5	6
<i>Junior</i>	7	co-op	8	9
<i>Senior</i>	10	co-op	11	—

■ **Honors Program**

See Honors Program, page 151.

■ **The Minor**

See The Minor, page 151.

College of Criminal Justice



Norman Rosenblatt, Ph.D., *Dean*

Robert D. Croatti, A.B., *Associate Dean*

Robert E. Fuller, M.A., *Assistant Dean*

Lester W. McCullough, Jr., B.A., *Assistant Dean*

Laurie A. Mastone, B.S., *Assistant to the Dean for Graduate Programs*

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James A. Fox, Ph.D.

George L. Kelling, Ph.D.

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Robert Sheehan, M.A.,
D.Jur. (Honorary)

Associate Professors

John H. Laub, Ph.D.

Wallace W. Sherwood,
LL.M.

Paul E. Tracy, Ph.D.

Assistant Professors

Norman D. Bates, D.Jur.

Frank A. Schubert, D.Jur.

Degree Offered: Bachelor of Science

The College of Criminal Justice was founded to help prepare students for professions that involve some of the most important issues of our times. To deal with these issues and to help prepare graduates for careers that are rewarding and beneficial, innovative methods and ideas, as well as the most advanced scholarship, are used by the college. As one of the few U.S. schools defining issues in criminal justice, the college has received substantial grants from the U.S. Department of Justice and has been designated a center of education and innovation in the field.

■ Professional Preparation

The college offers its students the opportunity to prepare for professional careers in the fields of criminal justice and private security; through its legal studies concentration, many students also prepare for entry to law school. The curriculum offers students a broad academic foundation upon which to base professional courses that introduce specific career areas. Legal studies, law enforcement, private security, corrections, probation and parole, juvenile delinquency, and planning and evaluation are some of the areas of interest pursued by students. Some graduates choose advanced study in such academic fields as criminology, planning and evaluation, social work, public administration, private security, and law, as well as in the entire area of criminal justice.

■ The Five-Year Cooperative Education Program

The College of Criminal Justice offers a five-year academic program on the Cooperative Plan of Education, which allows a candidate for the baccalaureate degree to undertake a specialized program of study in one of four academic concentrations: security and crime prevention, law enforcement, corrections, and legal studies.

Co-op assignments may include work in parole or probation offices, law firms, police departments, private security agencies, public or private institutions, social and government agencies, prisons, planning and evaluation units, or other areas related to the criminal justice program.

Students are offered a broad educational background for future roles in criminal justice, private security, or law. Because students are preparing for careers involving the concerns and problems of people from all walks of life, course work in the social sciences, behavioral sciences, and humanities is integrated with professional courses. The liberal content of the curriculum is highly desirable for its value not only as a foundation upon which general intellectual development may be based but also as an indispensable educational requirement for professional development. In addition, professional course offerings address the serious issues of our time, including terrorism, organized crime, drug abuse, industrial espionage, and prison overcrowding.

Graduates must be prepared to judge objectively the many problems inherent in the administration of justice in contemporary American society. The faculty and staff of the College of Criminal Justice help to prepare students for careers that will be not only personally productive and rewarding but intellectually stimulating as well.

■ Honors Program

The College of Criminal Justice participates in the University-wide honors program. For further information, please refer to the University Honors Program in the Undergraduate Admissions section on page 16.

■ Graduation Requirements

Candidates for the bachelor of science degree must complete all the prescribed work of the curriculum, a total of 172 quarter hours of credit.

Students who undertake the Cooperative Plan of Education must meet the require-

ments of the Department of Cooperative Education before they become eligible for their degrees.

No student transferring from another college or university is eligible to receive a degree until at least one year of academic work immediately preceding graduation has been completed at Northeastern.

■ **Graduation with Honors**

Candidates who have achieved superior grades in their academic work will be graduated with honors (*cum laude*). Upon special vote of the faculty, a limited number of this group may be graduated with high honors (*magna cum laude*) or with highest honors (*summa cum laude*). Students must have been in attendance at the University for at least six academic quarters before they become eligible for honors at graduation. (For quality-point equivalents, see page 55.)

■ **Sample Freshman-Year Program**

First Quarter

English
History
Introduction to Sociology
Introduction to Law and the Legal Process

Second Quarter

English
Foundations of Psychology I
Introduction to Politics
Critical Issues in Criminal Justice and Criminology

Third Quarter

History
Foundations of Psychology II
Introduction to American Government
Administration of Criminal Justice

Note: In addition to the above courses, students may choose to take Basic ROTC.

■ **Basic Course Requirements**

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Principles and Problems of Economics	8	Freshman English II*	4
Introduction to Politics*	4	State and Local Government†	4
Introduction to American Government*	4	History*	8
Foundations of Psychology I and II*	8	Science or Math†	8
Introduction to Sociology*	4	Middler-Year Writing Requirement	4
Freshman English I*	4	Non-Criminal Justice electives (12)	48

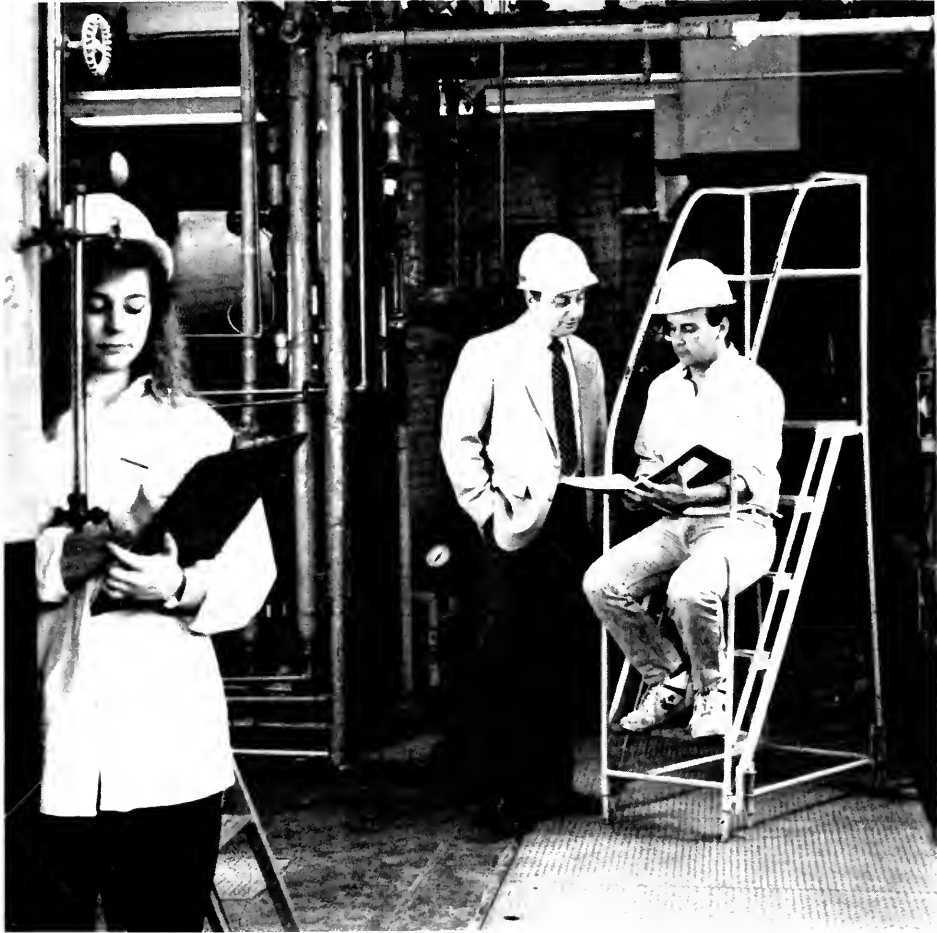
Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Administration of Criminal Justice*	4	Criminology†	4
Critical Issues in Criminal Justice and Criminology*	4	Introduction to Criminal Law†	4
Introduction to Law and the Legal Process*	4	Criminal Due Process†	4
		Criminal Justice Research	4
		Criminal Justice electives (9)	36

* These courses are usually taken in the freshman year.

† These courses are usually taken in the sophomore year.

College of Engineering



Paul H. King, Ph.D., *Dean*

Richard J. Murphy, Ph.D., *Associate Dean for Undergraduate Programs*

David R. Freeman, Ph.D., *Associate Dean and Director of the Graduate School*

Thomas E. Hulbert, M.S., P.E., *Associate Dean and Director of the School of
Engineering Technology*

Cynthia Snow, M.A., *Assistant Dean for Administration*

David C. Blackman, M.S., *Assistant Dean and Director of Minority Affairs*

Paula G. Leventman, Ph.D., *Assistant Dean and Director of Women in Engineering*

Candace A. Martel, M.Ed., *Director of Engineering Student Services*

The College of Engineering prepares students to contribute as professional engineers to the accumulation and application of new knowledge in a technologically changing world. Fundamentals are emphasized, thus offering students the opportunity to obtain

the basic technical knowledge necessary to practice in a variety of positions.

The concept of education as a continuing, lifelong process necessary for effective professional work in an environment of steadily emerging new ideas, practices, and technologies underlies the structure of the engineering curriculum. At the same time, study of the social sciences and humanities provides an awareness of the social, economic, political, aesthetic, and philosophical influences that are part of the context in which students will practice their professions.

The overall objectives of the College of Engineering are that students:

- Understand the basic principles of the particular branch of engineering selected;
- Develop and demonstrate competence in analysis and design appropriate to the engineering specialization;
- Communicate effectively and reason clearly;
- Acquire the motivation for continuing professional growth.

■ The Program

The College of Engineering offers cooperative education programs in chemical, civil, electrical, industrial, and mechanical engineering leading to the degree of bachelor of science with specification according to the engineering department in which the student qualifies. The college also offers a general engineering program, which leads to the awarding of an unspecified bachelor of science degree. Through this program students may design a curriculum suited to their objectives. The various curricula offer students the opportunity to prepare effectively for employment in industry or for post-graduate study.

The freshman year comprises three quarters of full-time study. Courses in mathematics, physics, chemistry, and computers form the foundation on which the upperclass curricula are built. Beginning in the second year, students progress through sequential engineering science courses to the advanced engineering courses specific to their major. These courses place a heavy emphasis on design.

At least one-eighth of each curriculum is devoted to electives in the social sciences and humanities. These courses are designed to provide students with an appreciation of the culture and values of the society in which they will practice their professions. All degrees have the additional requirement that the student demonstrate proficiency in communication.

Cooperative work in the chosen branch of engineering begins upon completion of the freshman year and continues throughout the remaining upperclass years, alternating with periods of full-time study. The work assignments during this time may be most valuable in helping to integrate the important elements of both an engineering and a liberal arts education. They can also be instrumental in teaching the value of teamwork and, at the same time, helping the student to acquire insight into the problems of actual engineering practice.

Most students complete the program in five years with seven quarters of cooperative work. Four-year co-op options are available for students who prefer to complete the program in a shorter time. These options provide four quarters of cooperative work. Students indicate their preference for the four-year option in the winter quarter of the freshman year.

■ Honors Program

The College of Engineering participates in the University-wide honors program. For further information, please refer to the University Honors Program in the Undergraduate Admissions section on page 16.

■ **Five-Year Bachelor of Science/Master of Science Degree Program**

The Departments of Electrical and Computer Engineering, Industrial Engineering and Information Systems, and Mechanical Engineering offer programs leading to both the bachelor's and master's degrees in five years. Students must maintain a 3.2 cumulative quality-point average, carry extra courses, and, in the senior year, forego one cooperative work quarter to complete the course requirements for both degrees within five years.

■ **Part-Time Evening Program**

The College of Engineering also offers a six-year, part-time curriculum leading to the degree of Bachelor of Science in Civil, Electrical, or Mechanical Engineering. Classes are held in the evening. Admission and course requirements are the same as for the five-year cooperative degree programs. For further information, consult the evening brochure of the College of Engineering.

■ **Transfer Credit**

Credit is generally granted toward a Northeastern degree for any reasonably equivalent course with a C (2.0) or better grade from another accredited institution. Students requesting transfer credit must provide supporting documentation such as transcripts and course descriptions.

■ **Graduation Requirements**

The College of Engineering reserves the right to amend programs, courses, and degree requirements to fulfill its educational responsibility to respond to new developments within pertinent academic disciplines.

Candidates for the bachelor of science degree must complete all of the prescribed work of the curriculum in which they seek to qualify, with no academic deficiencies in required course work.

Degree requirements will be based upon the year of graduation as determined by the date of entry or re-entry into the College of Engineering. The degree requirements and year of graduation for a degree candidate who does not continue to make normal academic progress for more than two quarters will be subject to review and possible change.

Students transferring from another college or university are not eligible to receive the bachelor of science degree until they have completed at least forty-eight quarter hours at Northeastern University immediately preceding their graduation.

■ **Graduation with Honors**

Candidates who have attained superior grades in their academic work will be graduated with honors (cum laude). Upon special vote of the faculty, a limited number of this group may be graduated with high honors (magna cum laude) or with highest honors (summa cum laude). Students must have completed at least one hundred quarter hours of course work at Northeastern University before they may become eligible for honors at graduation. (For qualifying quality-point equivalents, see page 55.)

■ **Accreditation**

All bachelor of science degree programs with specification, offered solely by the College of Engineering, are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET). In addition, part-time evening programs are also accredited.

■ **Engineering Student Services Office**

The Engineering Student Services Office provides academic support services for all undergraduate students in the College of Engineering. The office, located in 220 Snell Engineering Center, is the primary source of assistance for all full-time and part-time candidates for the B.S. degree. All upperclass student files are maintained in this office.

■ **Women in Engineering**

More women are entering the field of engineering each year as career opportunities expand. Industry and government, now aware of the largely untapped pool of qualified women, are eager to provide positions for competent women engineers. Any woman with scientific or technical interests and aptitudes should consider the many advantages of an engineering education.

Approximately four hundred undergraduate women are currently enrolled in the college. The Women in Engineering program office maintains an interactive database for academic support and networking. An active chapter of the Society of Women Engineers offers a full schedule of technical, professional, and social programs.

■ **Minorities in Engineering**

Through the Northeastern University Progress in Minorities in Engineering (NUPRIME) program, the college seeks to expand educational opportunities for qualified Blacks, Puerto Ricans, Mexican-Americans, and Native Americans. It provides scholarships based on merit or need. Every effort is made to provide enough aid so that outside work is not necessary during the freshman year. Advising and tutorial services are among the support services provided by the program.

■ **Computer Facilities**

The college provides computer facilities to support course work and research activities. To support freshman computer graphics and design courses, these facilities include a Digital VAX 11/785 system with thirty-two student terminals; a Computervision Computer-Aided Design and Manufacturing (CAD/CAM) system with six advanced workstations; fifteen UNIX workstations; and sixty-five IBM XTs, ATs and Macintoshes in local area networks. In addition, the engineering departments provide a variety of mini- and microcomputer facilities to support special course work and research, and the University computer center provides access to a VAX 8650 and 170 networked IBM PCs for general-purpose applications.

■ **Sample Freshman-Year Program**

The freshman-year program of studies in the College of Engineering is the same for all designated majors in the college.

First Quarter

Computers for Engineers
Calculus
Physics
English II
Physics Laboratory

Second Quarter

Engineering Graphics and Design
Calculus
Physics
General Chemistry
Physics Laboratory

Third Quarter

Calculus
Physics
General Chemistry
Great Themes in Literature
Laboratory elective

Note: In addition to the above courses, students may choose to take Basic ROTC.

Department of Chemical Engineering

Ralph A. Buonopane, Ph.D., *Associate Professor and Chairman*

Professors

John A. Williams, Ph.D.

Donald L. Wise, Ph.D.,

Cabot Corporation

*Professor of Chemical
Engineering*

Associate Professors

Bernard M. Goodwin, Sc.D.

Richard R. Stewart, Ph.D.

Ronald J. Willey, Ph.D.

Degree Offered: Bachelor of Science in Chemical Engineering

Chemical engineering involves the design, construction, operation, and management of processes in which materials essential to society are produced. The goal of the chemical engineer is to develop processes that use resources most efficiently, economically, and safely and in an environmentally sound manner.

Since the field of chemical engineering is so varied, the program has been designed to offer broad training in which fundamental principles are stressed, providing students with the strong background needed to acclimate themselves readily to graduate school or to an industry of their choice.

■ Professional Preparation

The chemical engineer has been defined as a “professional experienced in the design, construction, and operation of facilities in which materials undergo biological, chemical, and physical change.” Chemical engineers seek ways to reduce the costs, increase the production, and improve the quality of existing products, as well as to develop new products. Chemical engineering has grown out of discoveries which have served as a foundation for a great many new industries whose production processes involve chemical as well as physical changes.

The petrochemical, biomedical, pharmaceutical, agricultural chemicals, food processing, plastics and synthetic fibers, energy and synthetic fuels, and waste management areas require men and women trained in chemistry as well as in engineering. Many older industries, such as pulp and paper, metals and glass production, paints and coatings, and textiles and electroplating, also employ chemical engineers. Computerized process controls are being designed to improve the efficiency of older plants, and computer-aided design of new plants is becoming increasingly common.

■ The Program

The essential background for chemical engineers is derived from the fundamental courses in chemistry, mathematics, and physics required of all engineering students. Students then go on to advanced courses that apply these fundamentals to the solution of engineering problems. These upperclass courses blend the latest mathematical and theoretical analyses with the practical aspects of the profession. Students are provided the opportunity to pursue specialized career interests.

■ Department Facilities

Computer Facilities The Department of Chemical Engineering uses and maintains a wide variety of specialized proprietary software to complement course work and research. Programs, including several complete simulation/design packages, are available for course work from sophomore through senior years. A department computer facility for chemical engineering students maintains networked connections with the University

VAX computers (785 and 8650) and with IBM personal computers, printers, and plotters. A CAD system is also available.

Laboratories The department has an undergraduate teaching laboratory with sophisticated real-world (pilot-scale) equipment that students operate to develop and attain skills in experimental methods and communications necessary for professional practice. Department equipment for all unit operations experiments is designed to introduce the student to basic measurements used in chemical engineering processes with emphasis on temperature, pressure, and flow rate. Students are then given comprehensive problems, which they must solve experimentally, in such areas as heat and mass transfer, kinetics, thermodynamics, and process dynamics. They are required to design and conduct the experiment, reduce the data using computers, and write reports. Modern data acquisition techniques are used in all experiments with state-of-the-art process sensors that are capable of sending data signals to computers and microprocessors. These data can then be either further analyzed or read out.

Some undergraduates are allowed to conduct research projects in department research laboratories, which are currently devoted to modern catalytic materials, biotechnology, and computer process control.

■ Course Requirements

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
English	8	Engineering Graphics and Design	4
General Chemistry	8	Computers for Engineers	4
Chemistry Laboratory	1	Mathematical Analysis	4
Physics	12	Economics	4
Physics Laboratory	2	Social Science/Humanities electives	16
Calculus	20		

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Technical Writing	4	Heat Transport	4
Organic Chemistry	8	Separation Processes	4
Physical Chemistry	10	Chemical Engineering Economics	4
Chemical Engineering Calculations	8	Process Control	4
Computation Laboratory	2	Process Design	12
Chemical Engineering Thermodynamics	8	Chemical Engineering electives	12
Experimental Methods	8	Advanced Chemistry elective	4
Chemical Engineering Kinetics	4	Engineering elective	4
Momentum Transport	4		

■ Technical Electives

The Department of Chemical Engineering offers a variety of senior-year technical electives. These courses allow students to coordinate elective choices to satisfy their personal career objectives. Students must consult departmental guidelines to ensure satisfaction of design requirements.

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Mathematical Methods in Chemical Engineering	4	Biochemical Engineering	4
Mass Transfer Operations	4	Catalysis	4
Special Topics	4	Pollution Control in the Chemical Industries	4
		Projects	6

Required advanced chemistry and engineering electives are selected from approved courses offered by other departments.

Department of Civil Engineering

Mishac K. Yegian, Ph.D., *Professor and Chairman*

Professors

Reginald L. Amory, Ph.D.
Frederic C. Blanc, Ph.D.
John J. Cochrane, Ph.D.
Constantine J. Gregory,
Ph.D.
Paul H. King, Ph.D.
Kenneth M. Leet, Sc.D.

Associate Professors

Peter G. Furth, Ph.D.
Robert L. Meserve, M.S.
John G. Schoon, Ph.D.
Richard J. Scranton, M.S.
Irvine W. Wei, Ph.D.

Assistant Professors

Dionisio Bernal, Ph.D.
Peter K. Hadley, Ph.D.

Fadi A. Karaa, Ph.D.
Eugene A. Marciano, Ph.D.
Walid S. Najjar, Ph.D.
Ali Touran, Ph.D.
Chia-Ming Uang, Ph.D.

Adjunct Professors

Walter E. Jaworski, Sc.D.
Sidney J. Wartel, J.D.

Degree Offered: Bachelor of Science in Civil Engineering

The Department of Civil Engineering provides students with the opportunity to acquire a fundamental, flexible, yet rigorous engineering education so that, in view of inevitable change within the field, graduates will be in a position to build continuously on their basic knowledge. A wide range of electives in the humanities, social sciences, and basic sciences encourages students to investigate areas outside their specific technical focus and to extend their personal interests and involvements.

■ Professional Preparation

Civil engineering is a profession in which a knowledge of the mathematical and physical sciences, gained by study, experience, and practice, is applied with judgment to develop ways to utilize the materials and forces of nature economically for the progressive well-being of humanity. Civil engineers improve and protect the environment; provide facilities for community living, industry, and transportation; and provide structures for use by humanity. The buildings people live and work in, transportation systems, city and town services, water supply—all reflect creative planning and application of engineering principles on the part of civil engineers.

Civil engineers measure and map the earth's surface and use these maps to locate their projects. They design and supervise the construction of bridges, tunnels, buildings, dams, and aqueducts. They build supporting foundations for these and other structures. Civil engineers plan, design, construct, and maintain highways, railroads, canals, and airports. They regulate rivers and control floods; build docks, pipelines, seawalls; develop harbors; design and build plants and systems to bring pure water to homes and factories; design and build systems for sewage and refuse disposal; drain swamps; and irrigate arid areas.

■ The Program

The civil engineering curriculum is divided into academic quarters and cooperative work assignments. The work phase is designed to allow the student to gain insight into all types of activity normally confronted by the civil engineer. Thus, the well-motivated student can determine from these work experiences what further course work preparation will be required to become successful as a practicing civil engineer.

The curriculum is intended to offer a firm educational background for students preparing for a career in the planning, design, and construction of structures, transportation systems, and environmental systems as civil engineers.

The first years of the curriculum are, for the most part, devoted to the fundamentals of math, basic sciences, and engineering that comprise the foundation for later professional studies. The final years are devoted to a range of professional subjects, both required and elective. Guidance from a faculty adviser is available throughout the academic program.

■ **Part-Time Evening Program**

The Department of Civil Engineering also offers a six-year, part-time curriculum leading to the degree of Bachelor of Science in Civil Engineering. Classes are held in the evening. Admission and course requirements are essentially the same as for the cooperative degree program.

■ **Student Professional Society**

Northeastern University's student chapter of the American Society of Civil Engineers is a very active and professional organization. Participation in its activities has proved a unique complement to Northeastern's traditional classroom and co-op experience. In addition to traditional activities—which include sponsoring a weekly professional lecture series and occasional field trips to civil engineering construction sites and constructed facilities—during the past ten years members have successfully completed several significant community-service projects valued at approximately a quarter of a million dollars.

The students have developed and designed innovative and educational outdoor play exhibits illustrating both natural and artificial phenomena for the Children's Museum of Boston. They have worked with staff members of the Joseph P. Kennedy, Jr., Memorial Hospital for Children in the planning, design, financing, and construction of a special playground for handicapped children. They have designed and constructed an outdoor amphitheater for the Salvation Army's Camp Wonderland and performed an investigation of fire evacuation procedures and building modifications for the Coting School for the Handicapped. The students have designed and constructed a play-therapy center for Boston Children's Services Association and a unique play area for the Language and Cognitive Development Center. They financed, designed, and constructed a children's group therapy facility with indoor and outdoor components for the Brookline Mental Health Clinic. Last year, student chapter members financed, designed, and constructed an innovative playground for the Colonel Daniel Marr Boys and Girls Club of Dorchester. Each year, at least one such community-service project is undertaken.

In recognition of these unusual efforts, our student chapter has been designated the "single most outstanding" chapter in the nation and consequently has received the Robert Ridgway Award of the American Society of Civil Engineers for an unprecedented nine years.

■ **Department Facilities**

Computer Facilities The Department of Civil Engineering uses a variety of computer facilities to complement course work and research, including a microcomputer facility. All systems are supported with sophisticated software packages with applications to all disciplines of civil engineering.

Laboratories The department laboratories provide state-of-the-art equipment for research and teaching in soil mechanics, materials, structures, transportation, water quality, hydraulics, air pollution, environmental chemistry, microbiology, and unit operations. In addition, there are special project laboratories and three controlled environment rooms. The laboratories contain sophisticated equipment, including atomic absorption spectrophotometers, a gas chromatograph, a total carbon analyzer, a shaker table, triaxial and consolidation equipment, and structural testing machines.

■ Course Requirements

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
English	8	Chemistry	8
Calculus	20	Economics	4
Computers for Engineers	4	Mathematical Analysis	4
Engineering Graphics and Design	4	Social Science/Humanities electives	16
Physics	16	General elective	4
Physics Laboratory	2	FORTTRAN Laboratory	1

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Technical Writing	4	Soil Mechanics (w/ lab)	6
Structural Mechanics	8	Applied Probability Theory	4
Fluid Mechanics	4	Steel Design I	4
Engineering Economy	4	Dynamics	4
Structural Analysis (w/ lab)	6	Materials (w/ lab)	6
Environmental Engineering I	4	Concrete Design I	4
Capstone Design Project	4	Engineering Measurements (w/ lab)	6
Computations Laboratory	1	Technical electives	28

■ Technical Electives

The Department of Civil Engineering offers a wide variety of technical electives. These enable students to coordinate elective choices to satisfy their personal career objectives.

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Thermodynamics	4	Legal Aspects of Civil Engineering	4
Hydraulic Engineering	4	Civil Engineering Systems	4
Structural Mechanics III	4	Transportation Analysis	4
Structural Analysis II	4	Construction Management	4
Structural Analysis III	4	Steel Design II	4
Concrete Design II	4	Foundation Engineering	4
Geotechnology	4	Environmental Design	4
Environmental Engineering II	4	Air Pollution	4
Environmental and Hydraulics Laboratory	4	Highway Engineering	4

Selected courses must include a combined total of eleven or more engineering design credits as specified by the department's design elective credit list.

Department of Electrical and Computer Engineering

John G. Proakis, Ph.D., *Professor and Chairman, William Lincoln Smith Chair*

Professors

Chung Chan, Ph.D.

Anthony J. Devaney, Ph.D.

James M. Feldman, Ph.D.

Arvin Grabel, Sc.D.

Jack I. Hanania, Ph.D.

Sarma S. Mulukutla, Ph.D.

Chrysostomos Nikias, Ph.D.

Harold R. Raemer, Ph.D.,

*George A. Snell Professor
of Engineering*

Wilfred Remillard, Ph.D.

J. Spencer Rochefort, M.S.

Sheldon S. Sandler, Ph.D.

Martin E. Schetzen, Sc.D.

Walter C. Schwab, Ph.D.

Philip E. Serafim, Sc.D.

Michael B. Silevitch, Ph.D.

Robert D. Stuart, Ph.D.

Carmine Vittoria, Ph.D.

Associate Professors

Soeren Buus, Ph.D.

J. Duncan Glover, Ph.D.

Sheila Hinchey, Ph.D.

Vinaykumar Ingle, Ph.D.

Wayne G. Kellner, Sc.D.

Stephen W. McKnight,
Ph.D.

Robert N. Martin, M.S.

Lazaros Merakos, Ph.D.

Charles T. Retter, Ph.D.

Assistant Professors

Gordon L. Bechtel, Ph.D.

Clas A. Jacobson, Ph.D.

Nam Chung Li, Ph.D.

Nicol E. McGruer, Ph.D.

Chu Whan Moon, Ph.D.

Zainalabedin Navabi, Ph.D.

Ramachandran Raghavan,
Ph.D.

Carey M. Rappaport, Sc.D.

Bahram Shafai, Sc.D.

Amar Singh, Ph.D.

Charles Surya, Ph.D.

Man-Kuan Vai, Ph.D.

Kimon Valavanis, Ph.D.

Lecturer

Paul Monticciolo, M.S.

Degree Offered: Bachelor of Science in Electrical Engineering

Among their many achievements, electrical engineers have been primarily responsible for the development of the computer, integrated circuits, the pacemaker, satellite communication, space navigation, microprocessors, television, and the means of providing the energy needed to run our cities and our industries. At present, electrical engineers are working to help find solutions to the problems of information transfer and management, industrial productivity, energy conservation and alternative energy sources, transportation, and health care.

■ Professional Preparation

Despite the diversity of its applications, electrical engineering may be divided into two broad areas: information sciences and energy resources. The area of information sciences is concerned primarily with systems whose function is computation, communication, or control. Included in this area are the circuits and devices that comprise the systems and the application of the systems and engineering techniques to other disciplines. Energy resources deal with problems related to the sources, generation, and distribution of large quantities of electrical energy. No rigid boundary exists between the two areas, however, and many technical specialties within electrical engineering are applicable to both areas.

Many electrical engineers are involved with the more traditional activities of system design and development, such as the information sciences or energy resources areas. Other electrical engineers apply the knowledge gained in their professional education to such disciplines as ocean exploration, meteorology, experimental psychology, electronic music, health-care systems, bioelectronics, and educational devices for the disadvantaged.

The optimistic outlook for electrical engineering is based on the breadth of the technical activity described above. We are constantly reminded that among the pressing problems in our society are improvement of industrial productivity, the energy crisis,

data communication and management, urban transportation, health care, and the plight of the socially and physically disadvantaged.

No one has yet been able to forecast how these problems will be solved without the use of technological resources. Readily available electrical energy, data processing, electronic instrumentation and control, and communication are among the crucial resources needed.

■ The Program

The purpose of the curriculum is to offer the student an education that has the breadth and depth necessary for professional practice. Breadth is needed to give the student an awareness of all that electrical engineering encompasses and to provide the necessary background for independent study, a major criterion for professional success. Individual career objectives and initial professional achievement can result, in part, from learning a subject area in some depth. To achieve balance between depth and breadth, the curriculum is divided into the *core program* and *elective courses*.

The core program includes those courses with content applicable to all specialties in electrical engineering and offers students a basic background for future learning. Subject areas covered in the core program include:

- Circuits and systems;
- Digital computer design;
- Electrical measurements (laboratories);
- Electromagnetics;
- Electronic devices and circuits;
- Energy conversion.

The elective courses are designed to permit students to develop their own interests. Many students use this part of the program to learn a particular subject in depth and to prepare better for graduate studies. A broad range of courses is offered, including Digital Computer Architecture, Software Engineering, Communication Systems, Control Systems, Advanced Electronics, Solid-State Devices, Power Systems, Wave Propagation and Distributed Circuits, VLSI Design, Digital Signal Processing, Integrated Circuit Fabrication, and Mathematical Techniques.

In addition, students who wish to conduct individual projects or learn about a subject area not offered in an elective course may enroll in the senior project course and work with an interested faculty adviser on a one-to-one basis.

■ Five-Year Bachelor of Science/Master of Science Degree Program

The Department of Electrical and Computer Engineering offers a program leading to both the bachelor's and master's degrees in five years. Students must maintain a 3.2 cumulative quality-point average, carry extra courses, and, in the senior year, forego one cooperative work quarter to complete the course requirements for both degrees within five years.

■ Option in Power Systems Engineering

The Power Systems Engineering Program is a special option for those electrical engineering students who wish to specialize in energy resources. This program is conducted in cooperation with the electric power companies in New England and other eastern states.

■ Option in Computer Engineering

The option in computer engineering is for electrical engineering students who wish to specialize in the design of digital computers and their integration within larger systems for communications, resource management, and automatic control.

In the design of a digital processing system, hardware and software must be considered an integrated entity—software cannot be separated from hardware considerations. Thus, the computer engineer must be both a capable programmer and a capable hardware designer. The collective demands of computer engineering plus traditional electrical engineering encompass more knowledge than can be included in a single, highly structured degree program. The solution at Northeastern, as at many other schools, was to adopt a new undergraduate option within the Department of Electrical and Computer Engineering. The objective is to provide the student with a basic and comprehensive knowledge of the principles underlying the organization, design, and applications of digital processing systems. The option encompasses both the hardware and software design aspects of the system and allows students to acquire an understanding of the important relationships and trade-offs between the hardware and software components of a digital system. This understanding is necessary to create computer systems that satisfy the users' needs at prices they can afford.

■ Part-Time Evening Program

The Department of Electrical and Computer Engineering also offers a six-year, part-time curriculum leading to the degree of Bachelor of Science in Electrical Engineering. Classes are held in the evening. Admission and course requirements are essentially the same as for the full-time cooperative degree programs.

■ Laboratories

The program's laboratory courses—an integral part of the educational process—supplement concepts developed in core courses and introduce students to design and experimental techniques. Laboratory courses are offered in circuits, electronics, electromagnetics, discrete systems, power systems, VLSI design, digital signal processing, control systems, and semiconductor device processing.

To provide this facet of the educational experience, the department has laboratory equipment worth in excess of \$4.5 million. In addition to standard professional laboratory equipment, several specialized laboratory facilities are maintained. These include a PC laboratory, CRT terminals, and microprocessors. Programming courses and research programs also use the large computer systems of the College of Engineering and the University.

■ Course Requirements

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Calculus	16	Computers for Engineers	4
Physics	16	Engineering Graphics and Design	4
Physics Laboratory	2	Mathematical Analysis	4
General Chemistry	8	Social Science/Humanities electives	24
English	8	FORTTRAN Laboratory	1

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Writing Workshop	1	Electronic Design I	4
Circuits and Systems I, II, and III	12	Field Theory I and II	8
Linear Systems Analysis I and II	8	Fields and Energy Conversion	4
Thermodynamics or Material Science	4	Probability	4
Mechanics	4	Communication Systems	4
Electrical Engineering Laboratory	9	Technical electives	20
Electronics I and II	8	Computer Engineering	12

■ **Technical Electives**

The Department of Electrical and Computer Engineering offers a wide variety of technical electives, enabling students to coordinate elective choices to satisfy their personal objectives. To aid in selection, the elective courses are grouped by discipline. Students must consult departmental guidelines to ensure satisfaction of design requirements.

Electronic Circuits and Systems

Communication Theory
Control Systems
Electronic Design II
Numerical Methods and Computer Applications
Physical Electronics
Power Electronics
Semiconductor Devices and Technology
Senior Project Laboratories
Topics in Integrated Circuit Design

Electromagnetic Theory

Advanced Topics in Electromagnetic Field Theory
Numerical Methods and Computer Applications
Optics of Photon Devices
Semiconductor Devices and Technology
Senior Project Laboratories
Wave Transmission and Reception

Computer Engineering

Applied Discrete Analysis
Computer Engineering
Control Systems
Digital Signal Processing
Electronic Design II
Numerical Methods and Computer Applications
Senior Project Laboratories
Topics in Integrated Circuit Design

Systems Theory

Control Systems
Digital Signal Processing
Numerical Methods and Computer Applications
Power Systems I and II
Senior Project Laboratories
Wave Transmission and Reception

■ **Computer Engineering Option Course Requirements**

General Requirements Same as general requirements on page 168.

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Writing Workshop	1	Computer Engineering I–IV	16
Circuits and Systems I, II, and III	12	Field Theory I and II	8
Linear Systems I and II	8	Fields and Energy Conversion	4
Electronics I and II	8	Communication Systems	4
Electronic Design I	4	Topics in Integrated Circuit Design	4
Thermodynamics or Material Science	4	Probability	4
Mechanics	4	Technical electives	12
Electrical Engineering Laboratory	11		

■ **Power Systems Option Course Requirements**

General Requirements Same as general requirements on page 168.

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Writing Workshop	1	Mechanics	4
Circuits and Systems I, II, and III	12	Electric Machines	4
Linear Systems I and II	8	Electric Power Systems	8
Thermodynamics	4	Electrical Engineering Power Laboratory	3
Electrical Engineering Laboratory	9	Electronic Design	4
Electronics I and II	8	Computer Engineering	8
Field Theory I and II	4	Probability	4
Fields and Energy Conversions	8	Technical electives	8
Power Electronics	4		
Transients in Power Systems	4		

Department of Industrial Engineering and Information Systems

Wilfred P. Rule, M.S., *Professor and Acting Chairman*

Professors

Thomas P. Cullinane, Ph.D.
David R. Freeman, Ph.D.
Carolyn D. Heising, Ph.D.
Ronald R. Mourant, Ph.D.

Associate Professors

Nasser Fard, Ph.D.

Surendra M. Gupta, Ph.D.

Thomas E. Hulbert, M.S.
Mieczyslaw M. Kokar, Ph.D.
Emanuel S. Melachri-
noudis, Ph.D.

Ronald F. Perry, Ph.D.

Gerard Volland, Ph.D.

Assistant Professors

Jason Kim, Ph.D.
David Rumpf, Ph.D.
Mark Staknis, Ph.D.

Lecturers

Sue Leibowitz, M.S.
Richard H. Pike, M.B.A.

Degree Offered: Bachelor of Science in Industrial Engineering

Industrial engineers are problem solvers. Industrial managers need factual information that defines the consequences of alternative decisions. The industrial engineer collects this information and evaluates alternatives to make the decision that best achieves a particular organizational goal. The scope of decisions may involve the entire organization or some portion of it associated with a given product or service.

■ Professional Preparation

As a problem solver, the industrial engineer is concerned with complex human-machine systems that require a knowledge of engineering fundamentals. Since industrial engineers are often employed as managers, students are instructed in economics, statistics, operations research, and corporate organization so they can make informed managerial decisions. In addition, they are made aware of the relationship between human needs and the work environment through courses in work analysis, human factors, and manufacturing systems.

■ The Program

The program of study offered by the Department of Industrial Engineering and Information Systems emphasizes the current developments in industrial engineering: computer/information and industrial/manufacturing systems. Computer-based applications are an integral part of most courses, including Probability and Statistics, Operations Research, Simulation, and Engineering Economy and Work Design. In addition, students gain hands-on experience with microprocessors and automated manufacturing.

■ Five-Year Bachelor of Science/Master of Science Degree Program

The Department of Industrial Engineering and Information Systems offers a program leading to both the bachelor's and master's degrees in five years. Students must maintain a 3.2 cumulative quality-point average, carry extra courses and, in the senior year, forego one cooperative work quarter to complete the course requirements for both degrees within five years.

■ Laboratories

Manufacturing and Robotics Laboratory Students simulate an automated factory with the use of a master minicomputer, programmable microprocessors, a robot, and a conveyor belt integrated for manufacturing system experimentation.

Artificial Intelligence Laboratory This facility is equipped with Xerox artificial intelligence (AI) machines for programming expert systems and AI applications.

Computer Laboratory Numerous microcomputers provide an opportunity for students to gain experience in using applied software on engineering problems. The department has a large collection of industrial engineering software available for student use.

Microprocessor Laboratory This laboratory has microprocessors available for hands-on machine programming and microprocessor networking. Two local area networks of 16-bit microprocessors permit students to perform a variety of experiments in communication.

■ **Course Requirements**

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Calculus	20	Computers for Engineers	4
Physics	16	Economics I and II	8
Physics Laboratory	2	Mathematical Analysis	4
General Chemistry	8	Social Science/Humanities/Behavioral	
English	8	Science electives	16
Engineering Graphics and Design	4	Open elective	4

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Applied Engineering Software	1	Simulation	4
Technical Writing	4	People and Organizations	4
Work Design	4	Principles of Computation	
Statics	4	and Programming I	4
Electrical Engineering I	4	Engineering Economy and Statistical	
Probabilistic Analysis	4	Decision Theory	4
Statistics I and II	8	Engineering Science electives	8
Production and Inventory Control	4	Technical electives	16
Operations Research I and II	8	Design project	4
Systems I	4		

■ **Engineering Science Electives**

Dynamics I
Fluid Mechanics
Materials Science
Structural Mechanics II
Structural Analysis I
Thermodynamics I

■ **Technical Electives**

The Department of Industrial Engineering and Information Systems offers a wide variety of technical electives. These enable students to coordinate elective choices to satisfy their personal objectives. Students must consult departmental guidelines to ensure satisfaction of design requirements.

Statistical Quality Control
Manufacturing Automation
Microprocessor Applications
Human Considerations in Engineering Design
Human Factors
Management Information Systems
Facilities Design
Material Handling System Design
Expert Systems in Engineering

Department of Mechanical Engineering

Yaman Yener, Ph.D., *Professor and Acting Chairman*

Professors

George G. Adams, Ph.D.
Charles A. Berg, Sc.D.
John W. Cipolla, Jr., Ph.D.
John F. Dunn, Sc.D.
Alexander M. Gorlov, Ph.D.
Richard J. Murphy, Ph.D.
Welville B. Nowak, Ph.D.,
*Smith Professor of
Engineering*
John N. Rossettos, Ph.D.
John Zotos, Met.Engr.

Associate Professors

Ralph S. Blanchard, M.S.
Joseph T. Blucher, Ph.D.
Gregory J. Kowalski, Ph.D.
Bertram S. Long, M.Engr.
Mohamad Metghalchi,
Ph.D.
Uichiro Narusawa, Ph.D.
Hamid Nayeb-Hashemi,
Ph.D.
Mohammad E. Taslim,
Ph.D.

Yaman Yener, Ph.D.

Alvin J. Yorra, M.S.
Ibrahim Zeid, Ph.D.

Assistant Professors

Yiannis A. Levendis, Ph.D.
Andrew V. Tangborn, Ph.D.
Wego Wang, Sc.D.

Professor Emeritus

Arthur R. Foster, M.Engr.

Degree Offered: Bachelor of Science in Mechanical Engineering

Mechanical engineering is the branch of science broadly concerned with energy, including its transformation from one form to another, its transmission, and its utilization. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of a wide variety of devices, machines, and systems—including complex human-machine systems—for energy conversion, environmental control, materials processing, transportation, materials handling, prosthetics, manufacturing, and the field of consumer products.

■ Professional Preparation

The rapid technological advances of the past four decades have considerably expanded the mechanical engineer's sphere of inquiry and influence, bringing the engineer into contact with such diverse disciplines as nuclear and solid-state physics, quantum mechanics, plasma physics, chemical kinetics, magnetohydrodynamics, and rarefied gas dynamics, to name a few.

Mechanical engineers are engaged in all the engineering functions, including creative design, applied research, development, production, and management. The field of mechanical engineering is broad, providing an excellent professional base for career choice and interdisciplinary activities.

■ The Program

In the first years, students have the opportunity to learn the basic sciences (mathematics, physics, and chemistry), the engineering sciences (mechanics, thermodynamics, fluid mechanics, and materials science), and the humanities. Senior students may choose to concentrate in the areas of thermofluid engineering, mechanics and design, or materials science and engineering.

Thermofluid engineering is concerned with the properties and characteristics of the working fluid of machines. For example, the ability of an aircraft to fly depends upon the manner in which air flows over its lifting surfaces. The energy to run a turbine is extracted from the steam or combustion gases that pass through it. The engineer must have a knowledge of and understand the concepts of thermodynamics. The efficiency of a cooling tower depends on the mechanisms by which fluids transfer heat to surfaces, so the engineer must have a firm grasp of the principles of heat transfer.

Mechanics and design are based on the fundamental scientific and mathematical

tools used in the analysis of mechanical configurations as they evolve in the design of machines and power-producing devices. For example, the engineer in the area of mechanics and design may analyze and design structural components for power plants and deep-sea oceanographic vessels or develop new methods for evaluating filamentary composite structures. In the modern machine-tool industry, engineers may be concerned with computer control of machine tools. In the engine industry, they may analyze stresses in components such as turbine blades. To prepare for such challenges, senior students may expand their basic knowledge by selecting such courses as Intermediate Strength of Materials, Systems Analysis and Control, Engineering Analysis, and Computer-Aided Design.

Materials science and engineering is concerned with relationships among the structure, composition, properties, and functions of materials and with control of the structure and composition to achieve desired properties. Only recently have engineers come to realize that an understanding of the principles of materials science enables them to design more creatively and with greater freedom than the traditional reference to handbooks. Examples of areas in which mechanical engineers find materials properties a part of the basic design function include manufacturing techniques, structures (vehicles, buildings), energy conversion, electronic devices (including computers), packaging, and prosthetic devices. Advanced courses are available for mechanical engineers desiring further knowledge in the materials field.

■ **Five-Year Bachelor of Science/Master of Science Degree Program**

The Department of Mechanical Engineering offers a program leading to both the bachelor's and master's degrees in five years. Students must maintain a 3.2 cumulative quality-point average, carry extra courses, and, in their senior year, forego one cooperative work quarter to complete the course requirements for both degrees within five years.

■ **Part-Time Evening Program**

The department also offers a six-year, part-time curriculum leading to the Bachelor of Science in Mechanical Engineering. Classes are held in the evening. Admissions and course requirements are essentially the same as for the cooperative degree programs.

■ **Laboratories**

The laboratories of the Department of Mechanical Engineering occupy approximately eight thousand square feet, half of them new and the other half recently renovated. These laboratories support basic research in the three principal disciplines of the field: thermodynamics and fluid mechanics (thermofluids), mechanics of solids, and materials.

The thermofluids laboratories comprise an experimental internal combustion lab, a subsonic wind tunnel, a laser doppler (dual axis) velocimeter, and a variety of associated computer equipment and instrumentation for experimental research in combustion, heat transfer, and turbulent flow. In addition, the laboratories support an active program of solar energy research. Recent heat transfer research includes examination of interactions of coherent (laser) radiation with textile surfaces.

The solid mechanics laboratories are equipped to support research in structural dynamics and vibrations and in the physical behavior of structural materials, including fracture, fatigue, and wear. These laboratories include two dynamic mechanical programmable shakers with accelerometers and other instrumentation. Equipment for research in the behavior of materials includes two Systems Corporation MTS programmable testing machines and several machines for experiments in tension, torsion, and fatigue loading.

The laboratory for materials research includes two electron microscopes, two thin-

film laboratories, equipment for the preparation of metallurgical specimens, furnaces for processing experiments, and a powdered metal production plant. This laboratory now supports experimental research in properties of films, microstructure of materials, and other studies related to engineering applications of materials.

In addition to laboratories for physical experimentation, the department has a laboratory for computer-aided design (CAD) equipped with five Computervision workstations, printers, and plotters. The CAD laboratory is also supported by the engineering college computer center, which provides students and faculty access to an extensive library of mechanics codes and other related software for design. In addition, the department has a computerized numerical control (CNC) milling machine with which students may produce the parts they design on the workstations.

Other departmental resources include a fully equipped machine shop and a shop for electronics and instrumentation.

■ Course Requirements

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
English	8	Physics	12
General Chemistry	8	Physics Laboratory	2
Computers for Engineers	4	Mathematical Analysis	8
Engineering Graphics and Design	4	Physics/Science elective	4
Calculus	20	Social Science/Humanities electives	16
Key Ideas in Engineering	1	Economics	4

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Writing Workshop	1	Fluid Mechanics	5
Statics	5	Materials Science	5
Dynamics I and II	9	Design	20
Strength of Materials I and II	9	Electrical Engineering	4
Thermodynamics I, II, and III	15	Technical electives	16
Heat Transfer	5	Vibrations	5
Measurement and Analysis	5		

■ Technical and Design Electives

The four elective courses may be chosen from among the following. A course from outside the department may be substituted as well. Students must consult departmental guidelines to ensure satisfaction of design requirements.

Aspects of Forensic Design	Internal Combustion Engines
Design for Space Applications	Introduction to Combustion
Computer-Aided Design I and II	Materials Processing
Engineering Materials	Mechanical Behavior of Materials
Fluid Mechanics II	Mechanical Engineering Honors Projects
Gas Dynamics	Nuclear Engineering I and II
Intermediate Strength of Materials	System Analysis and Control

Program in Biomedical Engineering

Samuel Fine, S.M., M.D., *Professor and Director*

Associate Professor

H. Frederick Bowman, Ph.D.

Degree Offered: Bachelor of Science in one of the engineering disciplines

Biomedical engineering is concerned with bringing the engineering approach of analysis, design, invention, and manufacturing to problems of biological and medical significance.

Biomedical engineers are engaged in both theoretical and experimental studies either as independent investigators or as members of a research or development group. They may characterize and determine the mechanism of action of natural and synthetic macromolecules, analyze the properties of blood, and/or investigate the structure and function of such organ systems as the nervous system, the respiratory system, the cardiovascular system, or the endocrine system. They may design, develop, market, and apply transducers, cardiac pacemakers and defibrillators, heart-assist systems, artificial kidneys and limbs, or diagnostic and therapeutic X-ray and imaging systems. They are important members of the hospital health team.

An educational program involving the physical and biological sciences can provide a sound foundation for future work toward a doctorate in medicine or dentistry, a career in biomedical engineering, or a career as an engineer in a hospital or a government agency such as the U.S. Department of Health and Human Services, depending on such factors as the state of the economy and the student's own industry and overall ability. Industrial organizations, particularly those in the health-care industry, may be seeking individuals with a strong background in engineering supplemented by a biological science education. Other career opportunities may include public health, the psychological sciences, and the marine sciences.

■ The Program

There is no special curriculum in biomedical engineering. Several engineering disciplines help provide the engineer with a technical background sufficient for a career in this field. The purpose of the Program in Biomedical Engineering is to assist the engineering student, from the freshman year through the senior year, in choosing appropriate courses in the biological sciences that will complement those in the physical and engineering sciences and humanities taken in the standard engineering curriculum.

The student pursues a degree in an engineering discipline chosen in consultation with the biomedical engineering adviser. A biology minor in conjunction with the specific engineering discipline may be arranged. The life science courses selected may be taken as part of an engineering degree or, in part, as additional courses. Engineering graphics and design in the first year is replaced by a biology course for biomedical students. The opportunity to take these courses is dependent on the student's interests, capabilities, and academic record. It is, of course, limited by possible schedule conflicts.

Students who wish to take an engineering program that includes biological sciences must contact the director of biomedical engineering immediately on arrival at the University so that a proper freshman-year schedule can be arranged.

General Engineering Program

Advisory Committee for 1989–1990

Richard R. Stewart, Ph.D., *Chemical Engineering, Chairman*

Arvin Grabel, Sc.D., *Electrical Engineering*

Ronald F. Perry, Ph.D., *Industrial Engineering*

Richard J. Scranton, M.S., *Civil Engineering*

Alvin Yorra, M.S., *Mechanical Engineering*

Degree Offered: Bachelor of Science

Engineering and technology influence virtually all areas of endeavor and have a profound effect on the lifestyle and institutions of society. The impact is both cultural and scientific and is manifested by the awareness that solutions to society's problems are, in part, technological. The major purpose of the general engineering program is to provide flexible, interdisciplinary educational opportunities based on fundamental engineering concepts. The interdisciplinary nature of the program allows the student to develop other areas of interest in which an engineering background is professionally useful.

■ Professional Preparation

The program is designed for students whose interests are in engineering-related professions rather than in traditional engineering. It is expected that the work performed by graduates of this program will encompass the entire spectrum of professional activity, including such typical areas as computers, urban technology, social systems, and health care.

The general engineering program is highly elective and gives students the opportunity to develop, in conjunction with their advisers, a program designed to meet their own career objectives. To achieve this goal, the student is exposed to the fundamental engineering areas through courses in electric circuits, systems, mechanics, thermodynamics, and materials. These courses are based on principles developed in early courses in mathematics and physics. In addition, because the computer is a basic tool in any technological environment, each student is required to learn the elements of computer programming. Students completing the adviser-approved program receive an unspecified bachelor of science degree from the College of Engineering.

Graduate education and continuing education are increasingly important in professional life. Planning their programs appropriately will enable students to satisfy the course requirements necessary for admission to various graduate and professional schools, including law, medicine, public health, and social sciences as well as engineering.

■ The Program

Each student in the program is required to satisfy the following minimum requirements beyond the freshman year:

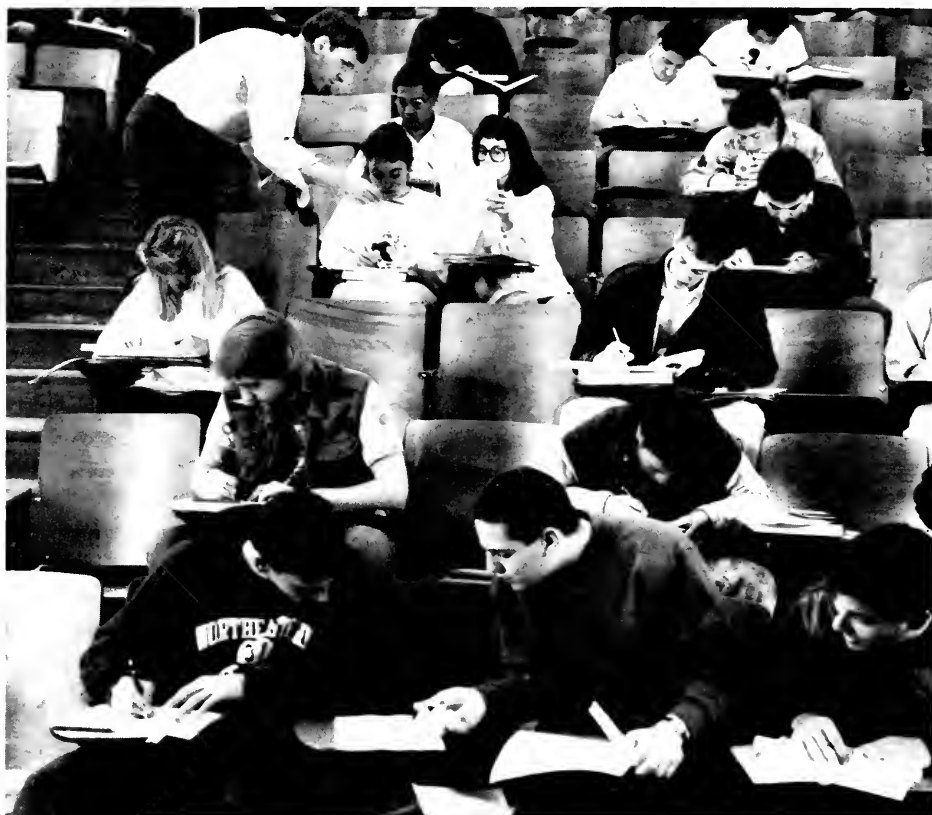
- 8 quarter hours in mathematics
- 4 quarter hours in circuit theory
- 4 quarter hours in materials
- 4 quarter hours in systems
- 4 quarter hours in thermodynamics

- 16 quarter hours in social sciences (consisting of at least two sequences of two courses each from the areas of sociology, economics, political science, and psychology)
- 8 quarter hours in the humanities from the areas of art, history, language and literature (not including grammar), music, philosophy, and drama (not including public speaking)

The remaining portion of the program is completely elective but must be designed to fit the student's career objectives. At least twenty-four quarter hours of course work must be taken in the professional departments of the College of Engineering (chemical, civil, electrical and computer, industrial and information systems, and mechanical engineering).

Beyond the freshman year, students plan their programs in conjunction with a faculty adviser. Although each student is enrolled in a unique program, the goals of each are the same: the breadth of an engineering-based liberal education in combination with the development of professional skills.

School of Engineering Technology



Thomas E. Hulbert, M.S., P.E., *Director and Associate Dean of Engineering*

Roy Dalsheim, B.S., *Assistant Director*

Rasma Galins, *Assistant Director*

John Kaczorowski, M.S., *Assistant Director*

Rosanne L. Bogan, B.S., *Staff Assistant*

Professors

Thomas E. Phalen, M.S., P.E.,
*Mechanical Engineering
Technology*

Ronald E. Scott, Sc.D., P.E.,
*Electrical Engineering
Technology*

Associate Professors

David S. Goldman, M.S., P.E.,
Computer Technology

Ernest E. Mills, M.S., P.E.,
*Mechanical Engineering
Technology*

Assistant Professors

David Allen, M.S.,
Design Graphics

Robert B. Angus, M.S., P.E.,
*Electrical Engineering
Technology*

Frank Bequaert, M.S.,
Computer Technology

Eric W. Hansberry, M.S., P.E.,
Design Graphics

Nonna K. Lehmkuhl,
M.Ed., M.S.,
Computer Technology

Frederick J. Nohmer,
Ed.D.,
*Electrical Engineering
Technology*

The programs offered by the School of Engineering Technology concentrate on the applications of technology rather than on its development. Emphasis is placed on the rational processes involved in converting theories and ideas into practical techniques, procedures, and products. The engineering technologist works with the professional engineer, scientist, medical doctor, supervisor, and craftsman in converting scientific knowledge and craftsmanship into products and techniques. Fundamentals are related to current practice, providing a supportive *why* for the practical *how*. At the same time, study of the humanities and social sciences gives students an opportunity to develop an awareness of the social, economic, and political influences that are part of the real world.

■ Professional Preparation

The structure of the engineering technology curriculum is based on the dual need for relevant technical skills and a foundation for future growth. Engineering technology education can assist students in:

- Understanding the scientific principles that govern the current technology of the particular branch of engineering that they select;
- Developing competence in the application of technology to problem solving;
- Communicating effectively the important implications of technological advances;
- Acquiring the motivation for continued development of technical skills.

■ The Programs

The school offers cooperative education programs in mechanical engineering technology, electrical engineering technology, and computer technology leading to the degree of Bachelor of Engineering Technology.

Since the freshman year of study is similar for electrical and mechanical engineering technology students, a firm choice of major may be delayed until the spring, when the choice of cooperative work assignments makes a decision mandatory. Students who choose to major in computer technology should decide on this major during the first quarter of their freshman year due to the unique program. Freshman courses act as a foundation for upperclass studies. About four-fifths of the upperclass program is devoted to scientific and technological study and about one-fifth to humanities-social science courses, with the aim of balancing technical proficiency with an appreciation for the nontechnical aspects of society and culture. Cooperative work assignments during the upperclass years are most valuable in helping students to integrate the important elements of both a technical and a liberal education.

■ Honors Program

The School of Engineering Technology participates in the University's honors program. For further information, please refer to the University Honors Program in the Undergraduate Admissions section on page 16.

■ Transfer Aerospace Co-op Program

For transfer students, the school offers a three-year Bachelor of Engineering Technology degree program with a major in aerospace maintenance engineering technology. This B.E.T. program, in cooperation with East Coast Aero Technical School, is designed for students who have successfully completed a program in aircraft and power plant mechanics or similar technician programs. During their three years of study at Northeastern, these students participate in the cooperative education system. To enter the program, students must pass College Algebra (MTH 1191), Pre-Calculus (MTH 1192), Calculus I (MTH 1193), and Chemistry (CHM 1131).

Graduates of this program are prepared to pursue careers in the aircraft industry's

technical, support, and management positions; to be members of engineering teams in spacecraft or aircraft component manufacturing; and to assume design/applications positions in both civilian and military aerospace markets.

The Aerospace Maintenance Engineering Technology program includes the following courses: Calculus II and III, English, Principles of Economics, Physics I, II, and III, Physics Laboratory I and II, Engineering Graphics I, Computer Programming, social science/humanities electives, Mechanics A and B, Stress Analysis A, Materials A and B, Electricity and Electronics I, Thermodynamics A, Fluid Mechanics A, Technology Laboratory A or C, technical electives, an open elective, and Stress Analysis B or Thermodynamics B.

■ Part-Time Evening and Weekend Programs

The school also offers six- and seven-year part-time curricula leading to the degree of Bachelor of Engineering Technology in the following areas:

- Aerospace maintenance engineering technology (transfer)
- Computer technology
- Mechanical engineering technology
- Mechanical-structural engineering technology
- Electrical engineering technology

Classes are held either in the evenings or on Saturdays. The evening classes generally meet two times per week. For further information on admission to these programs, contact the School of Engineering Technology office, 120 Snell Engineering Center.

■ Graduation Requirements

Candidates for the Bachelor of Engineering Technology degree must complete all of the prescribed work of the curriculum in which they seek to qualify. A total of approximately 189 quarter hours is required for the degree. Students who undertake the cooperative education program must meet the requirements of the Department of Cooperative Education before they become eligible for their degrees.

Students transferring from another college or university are not eligible to receive the degree until they have completed at least one academic year at Northeastern University immediately preceding their graduation. For further information on transferring, see Admission of Transfer Students, page 21.

■ Graduation with Honors

Baccalaureate candidates who have attained superior grades in their academic work will be graduated with honors (cum laude). Upon special vote of the faculty, a limited number of this group may be graduated with high honors (magna cum laude) or with highest honors (summa cum laude). Students must have been in attendance at the University at least six academic quarters and have earned a minimum of seventy-two quarter hours of credit before they may become eligible for honors at graduation. (For quality-point equivalents of honors, high honors, and highest honors, see page 55.)

■ Accreditation

The electrical and mechanical engineering technology baccalaureate day programs and the part-time baccalaureate programs in mechanical, mechanical-structural, and electrical engineering technology are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC/ABET). The Associate in Engineering degrees with majors in electrical and mechanical engineering technology are accredited by TAC/ABET.

■ Laboratories

Computer Laboratories Several types of computers are available in the computer technology laboratories, including a mainframe and a variety of personal computers. Certain software courses use the microcomputer laboratories. Fifty IBM XTs and ATs in a local area network support freshman computer graphics and design courses.

Electrical Laboratories The laboratories are an integral part of the electrical engineering technology curriculum. Laboratory courses include topics in circuits, electronics, computers, measurements, controls, microwaves, and power systems. From integrated electronic devices to precision microwave equipment, and from simple electromechanical devices to power equipment, students plan and pursue experiments and projects in a modern laboratory environment.

A variety of microcomputers, including IBM PCs and Apples, are available for laboratory experimentation, data reduction, and computation. VAX terminals are available in the laboratory for direct access to the University's mainframe computer.

Mechanical Laboratories The mechanical engineering technology laboratories contain equipment ranging from an electron microscope and ultrasonic measuring devices to pumps and weirs. Students working on thermofluids projects may use a turbine and various types of engines. A materials science laboratory provides research microscopes, various furnaces, a fluid-to-fluid extrusion press, X-ray diffraction equipment, an electron microscope, and other related equipment. For the mechanics and design areas, vibrations, experimental stress analysis, and materials testing facilities are provided.

Computer facilities available to the mechanical engineering technology student include various microcomputers for in-laboratory analysis with the Computervision CADDStation system and the SUN system, which both use UNIX.

■ Computer Resources

Many students own personal computers; in addition, the University and college provide major computer resources. Departments also have dedicated computer systems for use in laboratories and applications projects.

Some of the major facilities accessible to engineering technology students include a Digital Equipment Corporation (DEC) VAX 8650 with hard-wired terminals and extensive phone access, and a DEC VAX 11/785 supporting thirty-two terminals. The Computing Resource Center provides access to a VAX 8650 and one hundred and seventy IBM PCs for general use, and a Computervision CADDStation system supporting five high-resolution color workstations and one monochrome workstation.

The Division of Academic Computing supports the many computer-oriented curricula of departments throughout the University. As computer systems are made available for student and faculty use, Academic Computing assists in the design, development, and support of these systems.

■ Student Services for Engineering Technology

The Office of Engineering Technology Student Services, in 120 Snell Engineering Center, is the primary source of assistance for students in the School of Engineering Technology. The office handles transfer-of-credit petitions and assists students having problems related to study skills, academic difficulties, and choice of major or career. It also houses the records of upperclass engineering technology students. (Freshmen records are kept by the Office of Freshmen Affairs, which also handles freshmen transfer credit petitions and other matters involving records.) Freshmen are, however, welcomed by the office and encouraged to take advantage of its services and programs.

■ Women in Engineering Technology

Increasing numbers of women are entering engineering technology programs each year. Approximately twelve percent of the entering class is female, and opportunities both on cooperative work assignments and upon graduation are numerous. Any woman interested in technical work who has mathematical and scientific aptitude should consider the variety of engineering technology programs offered at Northeastern.

■ Minorities in Engineering

Through the Northeastern University Progress in Minorities in Engineering Program (NUPRIME), the college seeks to expand educational opportunities for qualified Blacks, Puerto Ricans, Mexican-Americans, and Native Americans. Advising and tutorial services are among the support services NUPRIME offers.

■ Sample Freshman-Year Program

The freshman-year program of studies in the School of Engineering Technology is similar for all majors in the school.

First Quarter

College Algebra
Physics I
English/Writing
Engineering Design Graphics I

Second Quarter

Pre-Calculus
Physics II
English/Literature
Computer Programming for Engineering
Technology*
Physics Laboratory I

Third Quarter

Calculus I
Physics III
English/Technical Writing
Physics Laboratory II
Engineering Design Graphics II*

* Computer technology students take Introduction to Programming and Basic Computer Organization instead of Computer Programming for Engineering Technology and Engineering Design Graphics.

Note: In addition to the above courses, students may choose to take Basic ROTC.

Computer Technology Program

Nonna K. Lehmkuhl, M.Ed., M.S., *Coordinator for Computer Technology*

Degree Offered: Bachelor of Engineering Technology

The Computer Technology Program is designed to supply a portion of the personnel needs of the complex computer industry. Graduates of this program may become an integral part of the engineering support team that develops techniques to implement an engineering design project. In this capacity, they become a research and production team that maintains close cooperation and communication with the engineers.

■ Professional Preparation

The Computer Technology Program is designed to provide students with both academic and technical learning experiences. These experiences are based on the core curriculum, which supports the present-day hardware and software systems industry. Students also choose technical electives in their area of interest. Theory courses are offered at the higher levels of the technology spectrum. These higher-level theory courses provide the means for students to continue their educational and professional development beyond the baccalaureate level. Some students may be prepared to pur-

sue the Master of Technology degree or, through supplemental course work, the more theoretical bachelor of science degree.

■ **The Program**

Computer technology deals with the design and application of equipment and systems related to computer hardware and software. Its major functions include:

- Interfacing the computer with process plants or machinery;
- Programming the computer for engineering, scientific, and business applications;
- Designing, engineering, and testing computers;
- Interfacing computers with various types of equipment for automatic drafting, data collection, design, and display.

Because of the interdependence of high-speed computers and electrical and electronic technology, this program includes courses in both circuit analysis and electronics along with the basic courses in mathematics and physics.

An introduction to computer programming and the study of basic computer organization provide an early contact with the major field of study. In addition, the freshman year includes literature and engineering graphics to encourage self-expression.

The freshman year of the computer technology major is similar to that of the electrical and mechanical engineering technology majors, with the exception of Introduction to Programming and Basic Computer Organization. These courses are taken in place of Computer Programming for Engineering Technology and Engineering Graphics II.

Upperclass students balance hardware and software courses, developing skills in various hardware systems from the micro to the mainframe and moving from languages to the design of software, such as an operating system. Upperclass students also take a laboratory that provides them with hands-on experience in both areas. In each area, course content is updated continually to keep pace with the ever-changing computer technology industry. Students may specialize in either hardware or software or continue with both. This choice is based on the selection of computer and/or technical elective courses.

■ **Basic Course Requirements**

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
College Algebra*	4	Physics I, II, and III*	12
Pre-Calculus*	4	Physics Laboratory I and II*	4
Calculus I*	4	Engineering Graphics I*	4
Calculus II and III	8	Introduction to Programming*	4
English*	12	Basic Computer Organization*	4
Principles of Economics†	4	Social Science/Humanities electives	16

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Circuit Analysis I and II	8	Advanced Computer Organization	4
FORTRAN	4	CPU Hardware Architecture	4
Semiconductor Logic	4	Non-numerical Algorithms	4
Electronics I	4	Microperipheral Hardware	4
Modern Programming Techniques	4	Numerical Algorithms	4
Computer Logic	4	Data Communications Methods	4
C Language	4	Industrial Software	4
Assembly Language	4	Industrial Hardware	4
Introduction to CPU Hardware	4	Computer Peripheral Hardware	4
Technical electives‡	16	Writing Workshop	1

* These courses are usually taken in the freshman year.

† This course is usually taken in the sophomore year.

‡ Technical electives may include Computer Networks or Computer Security.

Electrical Engineering Technology Program

John Kaczorowski, M.S., *Coordinator for Electrical Engineering Technology*
Ronald E. Scott, Sc.D., P.E., *Associate Coordinator for Electrical Engineering Technology*

Degree Offered: Bachelor of Engineering Technology

The electrical engineering technology program is directed toward supplying some of the personnel needs of the industrial complex and high-technology industries. Because of the nature of high-technology industries, close communication and cooperation are required between the technologist and the engineer in forming a working team. Through their cooperative work assignments in industry, students bear evidence of this need.

■ Professional Preparation

The electrical engineering technology program is designed to provide the student with a broad education through the use of a basic core curriculum. Courses are offered at a high level of theory at the upper end of the technology spectrum. Technical electives are offered to accommodate the student's area of interest.

The higher theoretical level provided in the program also prepares students to continue their education beyond the Bachelor of Engineering Technology degree. These continued studies could be toward a Master of Technology degree or, through supplemental course work, could prepare them for more theoretical engineering science subject areas.

Electrical engineering technology deals with the design and operation of equipment and systems related to power, communications, data processing, and electrical control. Its major functions include:

- The generation, transmission, and distribution of electrical energy for light and power purposes;
- The development and production of equipment for telephone, radio, television, radar, and communication;
- The design and construction of data-processing systems and analog or digital computers;
- The application of electrical and electronic devices in the control of processes and manufacture.

■ The Program

Since electrical engineering technology derives many of its fundamentals from developments in the pure sciences, the program of study begins with basic courses in mathematics and physics. In addition, the freshman year includes literature and engineering graphics to aid students in developing skills with which to express themselves.

In the upperclass years, courses are divided into four related sequences: circuits and systems, including feedback control; microwave devices; energy conversion, emphasizing electromagnetic devices; and laboratory work associated with all of the aforementioned. Current practice is stressed.

In the senior year, electives are offered to ensure that students acquire both depth and specialization.

The freshman-year program of studies in the School of Engineering Technology is similar for electrical and mechanical engineering technology. (See page 182.)

■ Basic Course Requirements

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
College Algebra*	4	Computer Programming for	
Pre-Calculus*	4	Engineering Technology*	4
Calculus I*	4	Physics I, II, and III*	12
Calculus II and III†	8	Physics Laboratory I and II*	4
English*	12	Social Science/Humanities electives	20
Principles of Economics†	4	Speech/Communication elective	4
Engineering Graphics I and II*	8	Open elective	4

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Circuit Analysis I and II†	8	Distributed Systems	4
Circuit Analysis III and IV	8	Circuits Laboratory I†	2
Electronics I, II, and III	12	Circuits Laboratory II	2
Control Engineering I and II	8	Electronics Laboratory	2
Engineering Analysis I	4	Advanced Electronics	
Energy Conversions	4	Laboratory I, II, and III	6
Electrical Measurements	4	Pulse and Digital I	4
Mechanics†	4	Technical electives‡	16
Digital Computers I and II	8	Writing Workshop	1

* These courses are usually taken in the freshman year.

† These courses are usually taken in the sophomore year.

‡ Technical electives may include Power Systems or Communication Systems.

Mechanical Engineering Technology Program

Thomas E. Phalen, M.S., P.E., *Coordinator for Mechanical Engineering Technology*

Degree Offered: Bachelor of Engineering Technology

The objectives of the program are to prepare the graduate for support activities as a technologist in the broad field of mechanical engineering technology. This technical field deals with the use of machinery to harness power resources and perform useful work. In contrast to civil engineering, which deals primarily with static forces and structures, mechanical engineering technology is more concerned with the motion and kinetics of devices activated by hydraulic, electrical, mechanical, or thermodynamic forces. Major functions of the mechanical engineering technologist include:

- Design and installation of all kinds of machinery, from pocket watches to the largest steel boring mills;
- Development and production of engines and transport equipment, as in automobiles, aircraft, ships, or railway cars;
- Construction and operation of furnaces and boilers, as well as heating and air-conditioning equipment, for the control of atmospheric and environmental conditions.

■ Professional Preparation

The student who has learned the principles of science and mathematics as applied to his or her field will be able to convert theories into practical techniques and processes.

The student will be shown how to communicate technical information effectively so that he or she may become an integral component of an engineer-technologist-technician design and operations team.

■ **The Program**

Since machinery is the predominant concern of the mechanical engineering technologist, the program of study offers considerable training in the principles underlying the design and operation of engines, power transmission devices, machine tools, and other machinery. This emphasis, of course, implies a thorough study of the physical laws concerning motion and transfer of energy. The study of materials, thermodynamics, and applied mechanics occupies a prominent place in the program.

These studies help provide the student with a broad foundation in those fundamental subjects essential to the understanding of current practice. In the senior year, students have elective choice and opportunity for specialization.

The freshman-year program of studies in the School of Engineering Technology is similar for electrical and mechanical engineering technology. (See page 182.)

■ **Basic Course Requirements**

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
College Algebra*	4	Physics Laboratory I and II*	4
Pre-Calculus*	4	Engineering Design Graphics I and II	8
Calculus I*	4	Computer Programming for	
Calculus II and III†	8	Engineering Technology	4
English*	12	Social Science/Humanities electives	16
Principles of Economics	4	Chemistry	4
Physics I, II, and III*	12	Speech/Communications elective	4
Engineering Economy	4		

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Mechanics A and B†	8	Thermodynamics A and B	8
Mechanics C	4	Fluid Mechanics A and B	8
Stress Analysis A and B	8	Technical Laboratories A, B, C, D, E	10
Materials A	4	Refrigeration and Air Conditioning	4
Kinematics	4	Heat Transfer	4
Electricity and Electronics I	4	Machine Shop	4
Measurement and Analysis		Technical electives‡	12
Laboratory A	2	Open elective	4
Mechanical Design A and B	8	Writing Workshop	1

* These courses are usually taken in the freshman year.
† These courses are usually taken in the sophomore year.
‡ Technical electives may include Mechanical Vibration or Power Generation.

College of Nursing



Eileen H. Zungolo, M.Ed., Ed.D., R.N., *Dean*

Ellen T. Daly, M.S., Ed.D., R.N., *Interim Associate Dean*

Christine Hoag, M.S., R.N., *Assistant Dean*

Associate Professors

Carol Easley Allen, M.A.,
Ph.D., R.N.

Jane F. Aroian, M.S.N.,
Ed.D., R.N.

Olivia M. Breton, M.Ed.,
R.N.

Elaine L. Capozzoli, M.A.,
R.N.

Janet A. Carroll, M.S., R.N.

Margery M. Chisholm, M.S.,
Ed.D., R.N.

Flora M. DeScenza, M.S.,
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M. Paula Fellows, M.S., R.N.

Jean P. Gilbert, M.S., Ed.D.,
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Lee Ann Hoff, M.S.N.,
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M. Marcia Lynch, M.S.N.,
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Susan C. Marchessault,
M.S.N., R.N.

Geraldine A. Medici, M.S.,
R.N.

Carole Shea, M.S., Ph.D.,
R.N.

Marilyn M. Smith, M.S.,
M.B.A., R.N.

Nancy L. Walden, M.S.N.,
R.N.

Mary E. Wilcox, M.S., R.N.

M. Delaine Williamson,
R.D., M.S., M.P.H.

Assistant Professors

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Elizabeth M. Howard, M.S.,
Ph.D., R.N.

D. Jeanne Otto, M.S.,
M.Ed., R.N.

Joyce A. Pulcini, M.S.,
Ph.D., R.N.

Linda M. Rosenbaum,
M.S.N., Ph.D., R.N.

Instructors

Donna H. Newby, M.S.N.,
R.N.

Elaine K. Small, M.S., R.N.

Lecturer

Bianca Chambers, M.S.,
R.N.

Degrees Offered: Bachelor of Science in Nursing, Master of Science in Nursing

■ Professional Preparation

The College of Nursing program is designed to prepare women and men as professional nurses able to practice nursing in any health-care setting. The role of the nurse has expanded considerably in the past twenty years, matching the change of pace in the health-care system. Rapid changes in health care, especially those related to age groups, care settings, and technology, require the professional nurse to have an up-to-date knowledge and practice base, the motivation and skills for lifelong learning, and the ability to translate new knowledge and skills into health care for individuals, families, groups, and communities.

Professional nurses, who are primary health-care providers, engage in a broad range of health promotion and teaching activities and coordinate care in every sector of the health-care system. Nurses have major roles in wellness and health promotion, in acute care, and in long-term care for chronic illness.

The need for professional nurses in the United States and internationally is well documented. This shortage translates into tremendous career opportunities for the nurse with a baccalaureate degree.

The College of Nursing program is offered on the five-year Cooperative Plan of Education. Students have the opportunity to alternate periods of academic study with periods of paid employment in health-care agencies. Thus, the students have the opportunity to prepare themselves as effective practitioners.

In keeping with the requirements of professional nursing education, the college has adopted the following educational objectives:

- Provide individuals with a broadly based educational experience;
- Prepare professional nurses capable of practicing in a variety of settings;
- Provide the stimulus and requisite education for ongoing personal and professional growth;
- Provide professional nursing education opportunities for individuals from diversified backgrounds and/or who have changing career goals;
- Provide additional opportunities through cooperative education for the integration of theory with practice in selected settings;
- Provide the educational background for graduate study in nursing.

■ The Five-Year Program

The college offers a five-year curriculum that leads to the degree of Bachelor of Science in Nursing and allows graduates to take the National Council Licensing Examination (NCLEX) to become registered nurses. Professional nursing practice is based on liberal and professional knowledge, clinical and cognitive skills, and the value system of the individual. The education for professional nursing includes a variety of educational strategies and the process of socialization to the profession.

The nursing curriculum offers students the opportunity to develop the clinical judgment skills that permeate the practice of professional nursing. The curriculum offers instruction in scientific theory and research in the areas of nursing, the humanities, and the biological, physical, and social sciences. More than fifty percent of the course work in the College of Nursing is centered in the sciences and humanities to ensure a liberal education.

The curriculum provides many opportunities for students to learn about the health needs of society and to assume beginning responsibilities for providing quality nursing care. Students may have planned sequential learning experiences in the classroom and health-care settings under the instruction and guidance of the faculty. Approximately twenty health-care agencies in the Greater Boston area provide students with experience in giving nursing care to clients in acute-care, day-care, and community health

agencies. The study of professional nursing is initiated in the freshman year, continued throughout the sophomore and middle years, and concentrated in the junior and senior years. Clinical experience in health-care settings is introduced in the second year of the program.

The College of Nursing was the first baccalaureate program in the nation to operate on a cooperative education plan. Beginning in the sophomore year, students alternate periods of academic study with cooperative work experiences. During periods of employment, students gain experience in nursing settings. The salary earned during the cooperative educational assignments accrues directly to the student. Positions are available in hospitals, community health agencies, and private industry. Cooperative work experiences are available not only in the Greater Boston area but also in selected sites nationwide and internationally. Tuition is charged only for academic quarters.

Students completing the five-year baccalaureate nursing degree at Northeastern have acquired a much greater practical experience base than is available in many other baccalaureate nursing programs. The graduates of our program are able to make the transition into professional nursing practice with ease. Employing agencies actively seek out the Northeastern University baccalaureate graduate.

■ **Graduation Requirements**

Candidates for the Bachelor of Science in Nursing must complete all prescribed courses in the curriculum. This totals a minimum of 179 quarter hours of credit. An overall quality-point average of C and a C average in required nursing courses are necessary for graduation. In addition, candidates must meet the requirements of the Department of Cooperative Education to be eligible for their degree.

■ **Honors Program**

The College of Nursing participates in the University-wide honors program. For further information, please refer to the University Honors Program in the Undergraduate Admissions section on page 16.

■ **Accreditation**

The program of the College of Nursing is fully accredited by the National League for Nursing and approved by the Board of Registration in Nursing of the Commonwealth of Massachusetts. This accreditation and approval indicate the program meets educational standards for faculty, curriculum design, student quality, and overall University support. The College of Nursing subscribes to the standards established by the American Association of Colleges of Nursing, of which it is a member.

■ **Licensure**

Nurses must meet specific requirements to obtain a license from the state in which they wish to practice. For Massachusetts licensure, these include graduating from a program approved by the Board of Registration in Nursing of the Commonwealth of Massachusetts and successfully passing the National Council Licensing Examination for Registered Nurses (NCLEX-RN).

■ **Opportunities for Registered Nurses**

The College of Nursing accepts registered nurses who wish to complete requirements for the Bachelor of Science in Nursing degree. The length of the program varies depending on the individual's previous educational experience and ability to achieve advanced placement through selected testing methods. The college accepts either the Act Proficiency Examination Program (ACT PEP) or the National League for Nursing Mobility Profile II Examination for advanced placement of the registered nurse student.

■ Transfer Credit

Students may be allowed to transfer credits earned in courses at other institutions if a grade of C or better has been obtained and if the courses are comparable to courses required at Northeastern. It is unusual for specific nursing courses to be transferable.

Transfer students are accepted in September, January, April, and June. A specially designed option is offered in the summer quarter to enable students to meet requirements to enter the clinical nursing courses in the sophomore year. For further information, see Admission of Transfer Students, page 22.

■ Special Requirements

Every student must have a complete physical examination, including a tuberculin test, before registering for first-quarter classes. Similarly, proof of immunization against German measles is required unless a satisfactory antibody titre against German measles is demonstrated. All students must carry malpractice insurance. Arrangements for this insurance are made by the University. Students in the College of Nursing are required to wear the school uniform in clinical laboratory areas during academic quarters. A modification of the uniform is worn during cooperative work periods. All students assigned to a clinical nursing course must be certified in cardiopulmonary resuscitation (CPR).

■ Facilities

The college occupies Robinson Hall on the main campus of the University. This location allows students to participate in all the academic and extracurricular activities of the University. In addition to faculty and administrative offices, a nursing resource unit is available for student use. The Nursing Resource Unit (NRU), which is located in 208-209 Robinson Hall, is a simulated hospital setting for student learning. The unit houses sophisticated equipment, such as the ACTRONICS interactive video system for CPR (cardiopulmonary resuscitation) learning, as well as several personal computers and a selection of computer-assisted instructional software. Also, professional nursing periodicals and other resource materials are available for student use.

The Office of Student Affairs is located in 211 Robinson Hall and is the primary source of assistance for students in the College of Nursing. The office houses the records of all upperclass students. The Office of Student Affairs staff handles transfer-of-credit petitions and assists students having problems related to study skills and/or academic difficulties. Records of freshmen are kept by the Office of Freshman Affairs. Counselors in that office assist freshmen with transfer credit petitions and other matters where records are needed. However, as students in the College of Nursing, freshmen are assigned a College of Nursing faculty adviser and are encouraged to take advantage of these services. All upperclass students are also assigned a faculty adviser by this office.

■ Student Government

Students have both a right and a responsibility to participate in College of Nursing policy making and evaluation through committee activities. Representatives of the student body hold membership on the Academic Standing Committee, the Curriculum Committee, and ad hoc committees. Student representatives may volunteer, be elected, or be appointed by the Office of the Dean.

The College of Nursing holds membership in the National Student Nurses' Association (NSNA). All College of Nursing students are eligible to join the NSNA, which is the largest independent student organization in the country. Membership benefits include a subscription to *Imprint*, scholarships, reduced rates for the *American Journal of Nursing*, monitoring of legislation that affects nursing students, and educational programs and conventions.

■ **Sample Freshman-Year Program**

First Quarter

Biology
Fundamentals of Mathematics
English
Nursing

Second Quarter

General Chemistry
Anatomy and Physiology I
English
Nursing

Third Quarter

General Chemistry
Anatomy and Physiology II
Sociology
Human Nutrition

■ **Basic Course Requirements**

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Biology	4	Growth and Development I and II	8
English	8	Pharmacology	3
General Chemistry	10	Fundamentals of Psychology I and II	8
Mathematics	4	Principles of Sociology	4
Microbiology	4	Social Anthropology	4
Anatomy and Physiology	12	Electives* (8)	32

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Introduction to Professional Nursing and the Health System	4	Nursing, Common Problems	7
Introduction to the Theoretical Basis for Nursing Practice	4	Medical-Surgical Nursing	9
Human Nutrition	4	Maternal-Child Nursing	9
Nursing, Basic Human Needs I	6	Psychiatric-Mental Health Nursing	7
Nursing, Basic Human Needs II	6	Community Health Nursing	9
Pathophysiological Concepts for Clinical Nursing	4	Issues in Contemporary Nursing	5
		Introduction to Nursing Research	4

* To meet the University's Middle-Year Writing Requirement, four of the electives are designated electives: 4 Q.H. of humanities, 4 Q.H. of history, 4 Q.H. of English, and 4 Q.H. of computer science.

■ **Electives**

The College of Nursing offers electives that enable students to satisfy their personal objectives.

<i>Course</i>	<i>Q.H.</i>
Health Assessment	4
Independent Study elective	2
Life Crisis Analysis and Response	4
The Nurse Entrepreneur	4
The Nurse Planner and Coordinator of Nursing Care	4

College of Pharmacy and Allied Health Professions



James J. Gozzo, Ph.D., *Acting Dean*

Mehdi Boroujerdi, Ph.D., *Associate Dean and Acting Director, Pharmacy Program*

Patrick F. Plunkett, Ed.D., *Acting Associate Dean, Allied Health Professions*

Anne M. Ahern, M.Ed., *Director, Office of Student Services*

Nancy P. Warner, M.S., *Academic Counselor*

Kathleen T. Foley, A.S., *Assistant to the Dean*

Carol M. Konis, *Assistant to the Dean*

Frances Wright, B.S., *Acting Director, Health Careers Opportunity Program*

Northeastern University recognizes the increased demand for well-educated pharmacists and allied health professionals. The College of Pharmacy and Allied Health

Professions has pledged to meet this need through a unique combination: the Cooperative Plan of Education and a highly innovative academic program designed to offer students the opportunity to prepare themselves to become effective professional practitioners, to enter graduate schools, and to obtain employment in the many areas responsible for the delivery of health care.

■ Professional Preparation

Fundamental to the college's approach to health-care education are:

- A curriculum of highly relevant and closely integrated courses in the physical, biological, behavioral, and administrative sciences constituting the basis of modern professional practice;
- A meaningful involvement in the clinical aspects of patient care via affiliations with teaching hospitals and related institutions;
- A cooperative education work program, including an externship-internship period for pharmacy only and a clinical component offering students the opportunity to acquire the skills and actual experience integral to the total program;
- A commitment to the search for and advancement of new and progressive concepts, ideas, and philosophies of education and professional practice.

■ Facilities

The college occupies the Mugar Life Sciences Building on the main campus of the University. This building and the Amelia Peabody Health Professions Center addition, with its well-equipped laboratories and classrooms, are designed to anticipate the physical needs of a growing and progressive college. In addition to faculty and administrative offices, a drug information and resource center, and the graduate school, there are laboratories for clinical chemistry, medicinal chemistry, prescription pharmacy, hematology, immunology, pharmacology, respiratory therapy, medical record science, and clinical microbiology. Animal rooms and audiovisual capabilities for all programs are also featured in this five-story structure. Research facilities are available for upper-class students who participate in original research projects.

■ Transfers with Advanced Standing

The College of Pharmacy and Allied Health Professions may accept qualified transfer students who have successfully completed one or more years of preprofessional course work in an accredited college or university. For more information, see page 22.

■ Accreditation

Each of the programs offered by the college is accredited by the appropriate professional group. The college holds memberships in both the American Association of Colleges of Pharmacy and the American Society of Allied Health Professions.

■ Honors Program

The College of Pharmacy and Allied Health Professions participates in the University-wide honors program. For further information, please refer to the University Honors Program in the Undergraduate Admissions section on page 16.

■ Graduation with Honors

Candidates who have attained superior grades in their academic work will be graduated with honors (cum laude). Upon special vote of the faculty, a limited number of this group may be graduated with high honors (magna cum laude) or with highest honors (summa cum laude). Students must have been in attendance at the University for at least six quarters before they become eligible for honors at graduation. (For qualifying quality-point equivalents, see page 55.)

Health Record Administration Program

Judith Weilerstein, M.P.H., *Associate Professor and Director*

Assistant Professor

Leslie A. Blide, Ed.D.

Degree Offered: Bachelor of Science

A health record administrator organizes, operates, and manages medical record services. Northeastern's program offers students the opportunity to develop the ability to design manual and automated health information and retrieval systems; to plan, organize, and direct medical record services; to develop, analyze, and evaluate medical records and indexes; to work with medical and administrative staffs in developing methods for evaluation of patient care; and to participate in research projects utilizing health-care information.

■ The Five-Year Major

The Health Record Administration Program is offered on the Cooperative Plan of Education. Successful completion of the prescribed curriculum, including directed study at an affiliated health center, will permit the award of a bachelor of science degree. Usually, graduates are eligible to take the registration examination given by the American Medical Record Association.

In the first two years of the program, students concentrate on liberal arts and sciences, including the required human anatomy and physiology courses and an overview of microbiology. Courses in health-care science help the student prepare for a role in health administration and health-care delivery.

The program offers the opportunity for preparation in administration, departmental and hospital management and organization, and electronic data processing. The professional courses in medical record science, medical terminology, and hospital law are complemented by directed applied study in medical record science at an affiliated health facility.

■ Certificate Program

The one-year Health Record Administration Certificate Program is designed for candidates holding a baccalaureate or master's degree who desire a new career. The four-quarter curriculum offers students who have demonstrated leadership potential and self-direction the opportunity to participate in an accelerated program that includes an integrated clinical practice experience. This clinical practice begins in the second quarter and totals more than three hundred hours, including a three-week management experience at the conclusion of the last quarter.

■ Accreditation

The Health Record Administration Program is accredited by the Committee on Allied Health Education and Accreditation (CAHEA) of the American Medical Association in cooperation with the Council on Education of the American Medical Record Association (COE-AMRA).

■ **Sample Freshman-Year Program**

First Quarter

Biology
English I
Mathematics
Orientation to Health Records I
Psychology

Second Quarter

Arts and Sciences elective
Biology
Mathematics
Professional Dynamics in
the Health-Care Delivery System

Third Quarter

Arts and Sciences elective
English II
Microbiology
Psychology

Note: In addition to the above courses, students may choose to take ROTC.

■ **Basic Course Requirements**

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
English Composition and English Literature*	8	Psychology*	8
Mathematics*	8	Sociology or Anthropology	4
Biology—General and Animal*	8	Arts and Sciences electives	16
Microbiology*	3	Introduction to Communication	4
Organizational Behavior	4	Electives	12
Introduction to Computer Science	4	Middler-Year Writing Requirement	1

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Language of Health Professions	2	Directed Practice	8
Health Records Science I–IV	16	Medical Computer Applications	4
Language of Medicine	4	Quality Assurance	4
Foundations of Medical Science	6	Independent Study	4
Hospital Law	2	Special Topics	4
Management of Health Record Services	12	Health Record Professional	2
Introduction to Health Data Research	4	Professional Dynamics in the Health-Care Delivery System*	4
Seminar in Health Records	2	Data Processing	4
Statistics	4	Anatomy and Physiology	10
Training and Development for Health-Care Professionals	2	Systems Analysis	4

* These courses are usually taken in the freshman year.

Medical Laboratory Science (Medical Technology) Program

Norma P. Barratt, MT (ASCP), Ph.D., *Assistant Professor and Acting Director*

Professor

James J. Gozzo, Ph.D.

Associate Professors

Judith T. Barr, CLS (NCA)
Sc.D.

Britta L. Karlsson, MT
(ASCP), M.S.

Assistant Professors

Panayiota Araszkievicz,
Ph.D.
Daniel H. Fisher, C (ASCP)
Ph.D.

Degrees Offered: Bachelor of Science, Associate in Science

Medical technology involves the application of principles of natural, physical, and biological sciences to the performance of laboratory determinations used in the diagnosis and treatment of disease and the maintenance of health.

■ Professional Preparation

It is projected that the demand for properly educated and certified medical technologists and medical laboratory technicians will increase as a result of greater emphasis on the quantity, quality, and efficiency of health-care delivery. With educational opportunities available in hematology, immunohematology, clinical chemistry, and clinical microbiology, students have the opportunity to prepare themselves for positions not only in a hospital laboratory but also in research, industrial, and governmental institutions. Related co-op work experience in hospitals, clinics, research, and industry helps prepare the graduates for a variety of positions in the working world. Opportunities for six months of co-op work experiences in foreign countries are available to interested students.

For qualified graduates, additional opportunities may be found in laboratory administration, education, and graduate programs.

■ The Five-Year Major

Students enter the College of Pharmacy and Allied Health Professions in the medical laboratory science program (medical technology). The college offers a five-year modified cooperative course of study leading to the bachelor of science degree. Upon satisfactory completion of the baccalaureate degree, the student should be eligible to take national certification examinations in medical technology and clinical laboratory science. Some states may require additional licensure examinations.

During the junior and senior years, qualified students are assigned to the hospital components of the medical technology program. To qualify, students must have an acceptable quality-point average; must have successfully completed all University course requirements, including those in biology, chemistry, mathematics, and medical laboratory science; and must have met other criteria established by the Clinical Studies Admission Committee. The professional courses in hematology, pathogenic microbiology, serology, mycology, parasitology, clinical chemistry, instrumentation, and blood banking are included in both the University and the hospital components of the program. Baccalaureate students have the option to complete a computer science minor or other relevant minors.

Students in the five-year major who decide not to complete their course of study may transfer into the three-year associate degree program.

■ The Three-Year Major

Students enter the College of Pharmacy and Allied Health Professions as medical laboratory science (medical laboratory technician) majors. This three-year modified co-op program leads to an associate degree.

The first two years of academic study parallel the baccalaureate program. During the third year, students alternate related co-op work experience with clinical applied studies at affiliated hospitals.

During the middler (third) year, qualified students are assigned to the hospital components of the medical laboratory technician program. To qualify, students must have an acceptable quality-point average and must have successfully completed all other requirements of the program.

Upon completion of the professional component of the program, students are eligible to take national certification examinations for medical and clinical laboratory technician.

■ **Accreditation**

The associate in science and the bachelor of science degree programs are accredited by the Committee on Allied Health Education and Accreditation of the American Medical Association.

■ **Sample Freshman-Year Program**

First Quarter

Mathematics or Calculus
General Chemistry
General Biology
English I
Medical Laboratory Science
Orientation I

Second Quarter

Mathematics or Calculus
General Chemistry
Animal Biology
Professional Dynamics in the
Health-Care Delivery System
Medical Laboratory Science
Orientation II

Third Quarter

Computer Science elective
Electives
English II
Basic MLS Urinalysis

■ **Basic Course Requirements for the Baccalaureate Degree**

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
English and English Literature*	8	Genetics and Developmental Biology	4
Biology—General and Animal*	8	Physics	10
Mathematics or Calculus*	8	Humanities electives	12
General Chemistry*	10	Social Science electives	8
Organic chemistry†	10	General electives (includes Statistics and Computer Science)	16–32
Physiology†	8	Middler-Year Writing Requirement	1
Cell Biology	4		

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Medical Laboratory Science Orientation I and II*	2	Advanced Clinical Microbiology I and II	4
Basic MLS Urinalysis*	3	Applied Clinical Study (at hospital)	21
Basic MLS Hematology I†	3	Laboratory Management	2
Basic MLS Hematology II†	3	Health Science Education	2
Basic MLS Immunohematology and Serology†	6	Parasitology	3
Basic MLS Chemistry and Instrumentation†	5	Mycology	3
Basic MLS Clinical Microbiology†	6	Senior Seminar	2
Advanced Hematology I and II	4	Current Concepts	1
Advanced Immunohematology	2	Professional Dynamics in the Health-Care Delivery System*	4
Advanced Clinical Chemistry I, II, and III	6	Advanced Immunology	4

* These courses are usually taken in the freshman year.

† These courses are usually taken in the sophomore year.

■ Basic Course Requirements for the Associate Degree

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
English and English Literature*	8	Physiology†	8
Biology—General and Animal*	8	Humanities elective	4
Mathematics or Calculus*	8	Computer Science	4
General Chemistry*	10	General elective	4

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Medical Laboratory Science		Basic MLS Clinical Microbiology†	6
Orientation I and II*	2	Basic MLS Immunohematology and	
MLS Urinalysis*	3	Serology†	6
Basic MLS Hematology I†	3	Basic MLS Clinical Chemistry and	
Basic MLS Hematology II†	3	Instrumentation†	5
Professional Dynamics in		Applied study (at hospital)	12
the Health-Care Delivery System*	4		

* These courses are usually taken in the freshman year.

† These courses are usually taken in the sophomore year.

Pharmacy Program

Mehdi Boroujerdi, Ph.D., *Associate Professor and Acting Director*

Medicinal Chemistry Section

Roger W. Giese, Ph.D.,
*Professor and Acting
Section Leader*

Professors

Robert N. Hanson, Ph.D.
John L. Neumeyer, Ph.D.

Assistant Professor

Gerald S. Jones, Ph.D.

Pharmaceutics Section

Harry Suryakusuma, Ph.D.,
*Assistant Professor and
Acting Section Leader*

Professor

Gerald E. Schumacher,
Pharm.D., Ph.D.

Assistant Professor

George C. Hwang, Ph.D.

Pharmacology Section

Barbara L. Waszczak, Ph.D.,
*Associate Professor and
Acting Section Leader*

Professors

Richard C. Deth, Ph.D.
James J. Gozzo, Ph.D.
Elliot Spector, Ph.D.

Associate Professor

Norman R. Boisse, Ph.D.

Clinical Pharmacy Section

Samuel J. Matthews,
Pharm.D.,
*Associate Professor and
Acting Section Leader*

Associate Professors

Robert J. Cersosimo,
Pharm.D.
Larry N. Swanson,
Pharm.D.

Assistant Professor

David I. Min, Pharm.D.

Pharmacy Health Care

Administration

Professor

Arnold S. Goldstein, L.L.M.

Associate Professors

Gerald R. Donehew, Ph.D.
Michael E. Montagne,
Ph.D.

Degree Offered: Bachelor of Science in Pharmacy

■ Professional Preparation

The need for well-qualified pharmacists is likely to continue in direct response to the greater emphasis on health care and, in particular, to the newer and more diversified utilization of those now in practice in this country. The majority of pharmacists are associated with community practice, and some of these are self-employed. Hospital pharmacy and institutional practice have attracted a large number of practitioners and represent the fastest-growing areas of the profession. The increased use of the pharmacist as a drug consultant to the medical and nursing staffs of these institutions has broadened the scope of professional opportunity and given practitioners even greater involvement as part of the health team.

Pharmacy also offers careers in research, manufacturing, government, law enforcement, and education. A considerable number of our graduates have entered leading graduate and professional schools. Another significant trend is found in the increasing number of women entering the profession. Approximately sixty percent of the entering class is now composed of women.

■ The Five-Year Major

The college offers a five-year curriculum that leads to the degree of Bachelor of Science in Pharmacy. The curriculum offers instruction in each of three natural divisions: arts and sciences courses in general education (the humanities and social sciences); mathematics and the basic physical and biological sciences; and courses in the areas of professional instruction—medicinal chemistry, pharmacology, pharmaceuticals, pharmacy administration, pharmacy practice, and clinical pharmacy.

The curriculum offers a well-balanced blend of academic classroom and cooperative education work experiences. Students completing the five-year baccalaureate pharmacy degree at Northeastern complete up to three thousand hours of combined co-op and clinical clerkship experiences—a much greater practical experience base than is available in many other pharmacy programs. These experiences enable pharmacy students to make the transition into pharmacy practice upon graduation easily. The classroom experience is well structured and allows for the integration of the students' cooperative learning experiences. In addition, the pharmacy program maintains close affiliations with many of the leading hospitals in the surrounding Boston area.

■ Graduation Requirements

Candidates for the Bachelor of Science in Pharmacy degree must complete all prescribed work of the curriculum and meet the requirements of the Department of Cooperative Education before they become eligible for their degrees.

No student transferring from another college or university is eligible to receive a degree until the last three years of academic work immediately preceding graduation have been completed at Northeastern. Exceptions to this requirement may be made for students transferring from another college of pharmacy.

■ Accreditation

The undergraduate pharmacy program offered by the College of Pharmacy and Allied Health Professions subscribes to the standards established by the American Council on Pharmaceutical Education and the American Association of Colleges of Pharmacy, of which it is a member.

■ Licensure

Pharmacists must meet certain requirements to obtain a license from the state in which they wish to practice. These requirements ordinarily include graduating from an

accredited college of pharmacy, passing an examination given by a state board of pharmacy, and completing an internship or apprenticeship.

The internship is a period of supervised practical experience in a preceptor pharmacy. This is generally satisfied during the cooperative work periods commencing at the end of the student's second academic year. The salary earned during these periods of full-time employment may be used to help defray educational expenses. Students may apply up to four hundred hours of the required academic clinical clerkship experience to their internship requirements. In addition, a college-directed externship adds to the total practice-oriented portion of the curriculum.

■ Sample Freshman-Year Program

First Quarter

Fundamentals of Mathematics/Functions and
Basic Calculus*
General Chemistry
Arts and Sciences elective
Biology

Second Quarter

Functions and Basic Calculus/Calculus
Professional Dynamics in the
Health-Care Delivery System
Biology
English I

Third Quarter

Calculus/free elective
English II
General Chemistry
Arts and Sciences elective

* Students not adequately prepared may need to take other mathematics courses.

Note: In addition to the above courses, students may choose to take Basic ROTC.

■ Basic Course Requirements

General Requirements

Course	Q.H.	Course	Q.H.
Fundamentals of Mathematics	4	Physics†	8
Functions and Basic Calculus*	4	Organic Chemistry†	10
Calculus*	4	Anatomy-Physiology†	10
General Chemistry*	10	Biochemistry	5
English*	8	Arts and Sciences electives (7)	28
Biology*	8	Middler-Year Writing Requirement	1

Professional Requirements

Course	Q.H.	Course	Q.H.
Pharmaceutical Calculations†	3	Professional Dynamics in the Health-Care Delivery System*	4
Pharmaceutics I and II, including laboratories	12	Professional electives (2)	8
Medicinal Chemistry/Pharmacology I, II, and III	16	Professional Practice Laboratory	1
Pharmaceutical Analysis and Quality Control	4	Clinical Pharmacotherapeutics	5
Drug Information and Evaluation	3	Pharmacokinetic Principles in Drug Therapy	4
Pathology	4	Pharmacy Management	4
Toxicology	4	Anti-infectives	5
Biopharmaceutics/Pharmacokinetics	4	Parapharmaceuticals	2
Pharmacology Laboratory	1	Nonprescription Medication	4
Jurisprudence	4	Interpersonal Skills for Health Professionals	4
Pharmacy Administration	4	Pharmacy Externship	4
Clinical Pharmacy Clerkship	15	Social Pharmacology	4
Beginning Computer Use	4		

* These courses are usually taken in the freshman year.

† These courses are usually taken in the sophomore year.

Toxicology Program

Robert A. Schatz, Ph.D., *Associate Professor and Acting Director*

Degree Offered: Bachelor of Science in Toxicology

Toxicology can be defined as the branch of science dealing with poisons, but it should not be restricted to this narrow definition. In its broadest sense, toxicology involves all aspects of adverse effects of chemicals on biologic systems. This includes the mechanisms of their harmful effects and the conditions under which these harmful effects occur as well as socioeconomic considerations and legal ramifications.

The activities and contributions of toxicologists are many and varied. The toxicologist working in the biomedical area is concerned with intoxications by drugs and other chemicals as well as the demonstration of drug safety or danger prior to release on the market.

Industrial or environmental toxicologists are concerned with the recognition, identification, and quantitation of the relative hazards from occupational or public exposure to toxicants. This concern is closely related to private and government responsibilities to ensure the safety of workers and the general public in contact with industrial and commercial products.

Forensic toxicology is a hybrid of analytical chemistry and fundamental toxicological principles and is concerned with the medicolegal aspects of the harmful effects of chemicals.

■ Professional Preparation

The faculty of Northeastern University's College of Pharmacy and Allied Health Professions believes that increased concern over the safety of drugs, chemicals, and cosmetics in the human population and in the environment, as well as new legislation regarding toxic substances, creates a need for toxicologists at the bachelor of science level.

Northeastern has created an innovative program in which its diverse academic resources offer training to this new breed of toxicologist. The core curriculum is enhanced by contributions from the University's Institute of Chemical Analysis, Applications, and Forensic Sciences; the Northeastern University Marine Science Institute in Nahant; and the Environmental Engineering faculty.

Recent personnel studies sponsored by private and federal agencies predict a great demand for toxicologists. Numerous federal and local laws aimed at protecting the environment, safeguarding employees in their workplaces, and protecting consumers against hazardous household products have created a critical shortage of toxicologists. Employment opportunities are being created in industry (chemical, cosmetic, and pharmaceutical firms) and government (for example, Environmental Protection Agency, Food and Drug Administration, National Institute of Occupational Safety and Health) as well as in police departments and various clinical settings. Students may also consider entering law school, medical school, and graduate programs in toxicology.

■ The Five-Year Major

The toxicology program leads to the bachelor of science degree in toxicology in five years under the Cooperative Plan of Education. The curriculum is a combination of science, liberal arts, and professional courses that offer students the opportunity to prepare themselves to practice toxicology in a variety of settings. Required and elective professional courses may be selected from medical laboratory science, chemistry, biology, sociology, criminal justice, computer programming, mathematics, and earth sciences.

Toxicology students may begin their cooperative experience during the summer of their freshman year.

■ Sample Freshman-Year Program

First Quarter

Mathematics
Arts and Sciences elective
Biology
English I
Toxicology Orientation

Third Quarter

Calculus
English II
Arts and Sciences elective
General Chemistry

Second Quarter

Functional Calculus
General Chemistry
Animal Biology
Professional Dynamics in the
Health-Care Delivery System

Note: In addition to the above courses, students may choose to take Basic ROTC.

■ Basic Course Requirements

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Mathematics*	4	General Biochemistry	5
Calculus*	8	Microbiology	4
General Chemistry*	10	Biostatistics and Computers†	4
English*	8	Electives	28
Biology*	8	Middler-Year Writing Requirement	1
Physics†	8	Cell Biology	4
Organic Chemistry†	10	Professional electives	12
Anatomy-Physiology†	10		

* These courses are usually taken in the freshman year.

† These courses are usually taken in the sophomore year.

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Pharmaceutical Analysis and Quality Control	4	Toxicology Laboratory	4
Medicinal Chemistry/ Pharmacology I, II, and III	16	Community Health Epidemiology	4
Pathology	4	Basic MLS Clinical Chemistry and Instrumentation	5
Toxicology I, II, and III	12	Professional Dynamics in the Health-Care Delivery System*	4
Pharmacology Laboratory	1		

* These courses are usually taken in the freshman year.

Respiratory Therapy Program

Mary E. Watson, Ed.D., *Associate Professor and Acting Director*

Associate Professors

Thomas A. Barnes, Ed.D.

Patrick F. Plunkett, Ed.D.

Assistant Professor

Glen J. Low, M.Ed.

Degree Offered: Bachelor of Science in Respiratory Therapy

Respiratory therapy is an allied health specialty instrumental in the diagnosis, treatment, management, and preventive care of patients with cardiopulmonary problems. These patients may be found in newborn nurseries, surgical and medical wards, emergency rooms, outpatient departments, and intensive care units. They may be suffering from a variety of acute and chronic conditions that are life threatening or disabling.

■ Professional Preparation

Respiratory therapists are involved in the treatment of cardiac and pulmonary disorders, such as cardiac failure, asthma, pulmonary edema, emphysema, cerebral thrombosis, drowning, hemorrhage, and shock. With the assistance of sophisticated ventilators and monitoring equipment, respiratory therapists are an essential part of the critical-care team. Responsible for life support of the patient through airway management, artificial ventilation, external cardiac massage, and many other sophisticated emergency support measures, the respiratory therapist is a life-support specialist.

Routine patient care is also important. Working under physicians' orders, respiratory therapists carry out specific therapeutic measures. They must be experts in providing and recommending specialized modalities of respiratory care. They must be competent in such areas as medical gas administration, including oxygen; humidification, aerosols, and intermittent positive pressure breathing (IPPB); chest physiotherapy, cardiopulmonary resuscitation, mechanical ventilation, airway management, and pulmonary function studies; blood gas analysis; and physiologic monitoring.

Today, the field of respiratory therapy is expanding rapidly to keep pace with the demand for new techniques to cope with such environmentally related problems as smoking and air pollution. New techniques also have been developed for use in the treatment of respiratory failure following open heart and other types of major surgery.

■ The Five-Year Major

Students enter the College of Pharmacy and Allied Health Professions as majors in the respiratory therapy program. Mathematics, chemistry, and the physical, biological, medical, and health sciences offer the bases for professional instruction in respiratory therapy. English, psychology, and elective courses in the humanities and social sciences offer a liberal arts background. Clinical study at the major teaching hospitals provides the opportunity for direct patient care and the immediate application of highly specialized techniques. The curriculum leads to the bachelor of science degree in respiratory therapy and includes academic quarters at the University, a structured clinical program, and assigned co-op quarters. Successful completion of the first three and one-half years of the program makes students eligible for the first part of the examinations administered by the National Board for Respiratory Care.

■ Perfusion Technology Certificate Program

An accelerated program in cardiovascular perfusion technology is available for professionals with a baccalaureate or master's degree who are interested in a new career. Candidates must have the science background needed to master professional courses

in the curriculum. The curriculum allows students to integrate didactic, laboratory, and clinical practice courses over a twelve-month period. Graduates of the certificate program are eligible to take the National Board Examination for Certified Cardiovascular Perfusionists.

■ **Accreditation**

Both the degree and accelerated programs are accredited by the Committee on Allied Health Education and Accreditation, sponsored by the American Medical Association.

■ **Sample Freshman-Year Program**

First Quarter	Third Quarter
English I	Microbiology
General Chemistry	General Chemistry
Basic Animal Biology	Respiratory Therapy Seminar III
Respiratory Therapy Seminar I	Calculus
Psychology	English II
Second Quarter	
Mathematics	
Respiratory Therapy Seminar II	
Basic Animal Biology	
Arts and Sciences elective	
Professional Dynamics in the Health-Care Delivery System	

Note: In addition to the courses above, students may choose to take Basic ROTC.

■ **Basic Course Requirements**

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Biology	8	Computer electives	8
Anatomy and Physiology	10	English Composition and Literature	8
Microbiology	4	Arts and Sciences electives	24
General Chemistry	10	Middler-Year Writing Requirement	1
Physics	4	Psychology	4
Mathematics	8		

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Respiratory Therapy Seminars	3	Introduction to Pediatric Respiratory Care	2
Clinical Seminars	2	Cardiopulmonary Laboratory Techniques	4
Professional Practice Labs I, II, III, and IV	4	Cardiopulmonary Laboratory Practice	1
Cardiopulmonary Physiology	4	Clinical Practice I	4
Advanced Clinical Physiology	4	Clinical Practice II	4
Pathology	4	Advanced Medical Monitoring	4
Introduction to Patient Care	4	Respiratory Care for the Neonatal Patient	4
Introduction to Respiratory Care	4	Cardiopulmonary Diseases	4
Respiratory Care for the Med-Surgical Patient	4	Professional Dynamics in the Health-Care Delivery System	4
Moral Problems in Medicine	4	Professional electives	16
Respiratory Care for the Critical Patient	4	Clinical Practice III	6
Pharmacology	4		

Health-Care Curriculum Open Option Program

Students interested in pursuing a career in the health-care professions who are undecided as to which profession is right for them should explore the Open Option Program offered by the College of Pharmacy and Allied Health Professions.

The Open Option Program offers freshmen a core of courses designed to provide the basic scientific background required for each of the professional programs in the College of Pharmacy and Allied Health Professions. Students are also introduced to the basic principles of health-care delivery, health-care agencies and services, and attitudes, behavioral aspects, and policies that may influence health-care systems.

The Open Option is especially valuable to students who need assistance in determining an area of interest within the health-care field. By examining various professions, and thus gaining an overview of the discipline, students can refine their health-care career goals. They may also familiarize themselves with what is expected of them in various health-care professions. Subsequent selection of a professional program may proceed more smoothly, an advantage that may help students gain more confidence and certainty in pursuing a degree. Even though in the Open Option Program students consider various health professions, they also complete some of the prerequisite courses required of all the professional programs; thus they do not lose valuable time prior to selecting a major.

■ Open Option Courses

In this plan, students may complete the core courses in the first-year curriculum without selecting a major and without loss of valuable time. Upon satisfactory completion of the first year of courses, students select a professional area in which to major. Professions in the college include pharmacy, health record administration, medical laboratory science, respiratory therapy, and toxicology. These are the courses offered in the first-year Open Option.

- Animal Biology
- English Composition
- Functions of Basic Calculus
- Fundamentals of Mathematics
- General Chemistry I and II
- General Biology
- Introduction to Literature
- Professional Dynamics in the Health-Care Delivery System

Satisfactory completion of the nine courses in the Open Option core curriculum, as well as other courses completed during the first year, is necessary for admission to one of the professional programs of the college.

Special Note The Open Option plan does not apply to the Dental Hygiene Program.

Dental Hygiene Program

Degrees Offered: Associate and Bachelor of Science in Dental Hygiene

The Forsyth School of Dental Hygienists conducts a program of dental hygiene education in cooperation with Northeastern University. Students attend classes at both the Forsyth Dental Center and Northeastern. The dental hygienist is licensed to render preventive services to a patient under the supervision of a dentist, including administering

dental prophylactic treatment, preparing dental radiographs, and teaching prescribed methods of maintaining dental health.

■ The Two-Year Program

The first year includes courses in anatomy and physiology, chemistry, microbiology, histology, nutrition, dental materials, radiology, periodontology, pathology, head and neck anatomy, dental hygiene, and clinical dental hygiene instruction. In the second year, students take general courses, such as English, sociology, and psychology, and professional courses in public health, pharmacology, law and ethics, and dental hygiene. They also continue to receive clinical dental hygiene instruction.

■ The Four-Year Program

Education at the baccalaureate level enhances the dental hygienist's opportunities, abilities, background, and values. The first year includes courses in general education and basic science with some introductory courses in dental hygiene. The second and third years provide core dental hygiene courses in theory and practice. Students are eligible for licensure exams at the end of the third year. The fourth year provides opportunities for students to specialize in areas of dental hygiene or to increase their liberal arts background. This baccalaureate option is also open to postgraduate dental hygienists who already hold an associate degree in dental hygiene.

■ Degree

Students satisfactorily completing the program will receive the Certificate in Dental Hygiene from the Forsyth School and the Associate in Science or Bachelor of Science in Dental Hygiene from Northeastern University. Graduates are required to fulfill the state dental hygiene licensure requirements before they may practice.

■ Accreditation

This program is accredited by the Commission on Dental Accreditation of the American Dental Association, which is a specialized accrediting body approved by the United States Department of Education and the Council on Post Secondary Accreditation.

■ Admissions

Application should be made directly to the Forsyth School of Dental Hygienists Office of Admissions, 140 The Fenway, Boston, MA 02115. For an application and a copy of the college catalog, contact the Office of Admissions at the above address or at 617-262-5200, ext. 212 or 213.

■ Sample Freshman-Year Program for the Baccalaureate Degree

First Quarter

General Biology
Psychology
English I
Mathematics
Dental Hygiene Orientation

Second Quarter

Animal Biology
General Chemistry
Mathematics
Professional Dynamics in
Health-Care Delivery Systems
Dental Hygiene Orientation

Third Quarter

Microbiology
General Chemistry
English II
Sociology
Dental Anatomy

■ **Basic Course Requirements for the Baccalaureate Degree**

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
English and English Literature	8	Humanities electives (includes	
Biology—General and Animal	8	English Writing)	8
Anatomy and Physiology	10	Social Science electives (includes	
Mathematics	8	Psychology and Sociology)	12
General Chemistry	8	General electives (includes	
Microbiology	4	Statistics and Computer Science)	14–28

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Dental Hygiene Orientation I and II	2	Law and Ethics	2
Dental Anatomy	2	Pain Control	2
Radiology	3	Community Health Extramural	2
Dental Hygiene	12	Research Study	3
Clinical Dental Hygiene	23	Advanced Public Health	4
Nutrition	2	Oral Health Gerontology	4
Histology	2	Advanced Principles of Dental Disease	4
Pathology	4	Advanced Periodontology Clinic	2
Periodontology	4	Interpersonal Skills	
Public Health	2	for Health Professionals	4
Pharmacology	3	Professional Dynamics in	
Head and Neck Anatomy	2	Health-Care Delivery Systems	4
Dental Materials	2	Professional electives	12–16

■ **Sample Freshman-Year Program for the Associate Degree**

First Quarter

Human Anatomy and
Physiology I
General Chemistry I
Dental Anatomy
Head and Neck Anatomy
Radiology
Dental Hygiene
Clinical Dental Hygiene

Second Quarter

Human Anatomy and
Physiology II
General Chemistry II
Histology
Periodontology
Dental Hygiene
Clinical Dental Hygiene

Third Quarter

Microbiology
Dental Materials
Pathology
Nutrition
Dental Hygiene
Clinical Dental Hygiene

■ **Basic Course Requirements for the Associate Degree**

General Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
English Composition and English Literature	8	Foundations of Psychology	4
Chemistry	8	Sociology	4
Microbiology	4	Human Anatomy and Physiology	10

Professional Requirements

<i>Course</i>	<i>Q.H.</i>	<i>Course</i>	<i>Q.H.</i>
Dental Anatomy	2	Periodontology	4
Radiology	3	Public Health	2
Dental Hygiene	12	Pharmacology	3
Clinical Dental Hygiene	23	Head and Neck Anatomy	2
Nutrition	2	Dental Materials	2
Histology	2	Law and Ethics	2
Pathology	4	Community Health Extramural	2

Alternative Freshman-Year Program

(University College)

■ Program Goals

Students in the Alternative Freshman-Year Program are considered regular students and are degree candidates with an undeclared major. The Alternative Freshman-Year Program is specifically designed to help students strengthen their basic academic skills in writing and mathematics. While helping them gain confidence in their ability to do college-level work, the program also offers students an opportunity to consider several different areas of study before committing themselves to a specific major. Through the combination of a carefully prescribed curriculum and the attention of professional counselors, each student is helped to establish a program suited to his or her individual needs. These same counselors are normally available on a continuing basis throughout the student's entire first year.

Developed in collaboration with University College, a division of Northeastern University serving students who seek a flexible college program, the Alternative Freshman-Year Program has a proven record of success in assisting students to develop their full potential.

■ Program Structure

Students in the Alternative Freshman-Year Program begin with twelve to sixteen quarter hours of credit in their first academic quarter. In their second and third quarters, students in most tracks accelerate their schedules to take sixteen quarter hours of credit per quarter. Students in the health sciences track take fifteen quarter hours in their second quarter and seventeen quarter hours in their third quarter.

After completing the prescribed Alternative Freshman-Year Program and achieving both a cumulative quality-point average of 1.400 or better and specific program requirements as noted, students may continue their degree programs within University College or transfer, with sophomore status, to any program in the College of Business Administration or the College of Criminal Justice as well as certain programs in the Boston-Bouvé College of Human Development Professions and the College of Arts and Sciences. In addition to the cumulative quality-point average of 1.400 or better, the College of Business Administration requires a 1.800 average in four key courses—Mathematics for Business (MTH 1113), Fundamentals of English II (ENG 4014), Economics I (ECN 4601), and Survey of Business and Management (MGT 4110). Additional program requirements for students who would like to be admitted to sophomore status in the College of Pharmacy and Allied Health Professions are listed in the student handbook for Basic Colleges.

■ Faculty and Resources

The University has carefully selected for the Alternative Freshman-Year Program faculty members who are aware of individual student goals as well as the needs of students working to adjust to a college program. Faculty and students meet in small classes of not more than twenty-five students.

As members of the program, students are considered regular Northeastern University day students even though they have unique schedules and a distinctively tailored cur-

riculum. Therefore, they have access to all counseling services, physical education facilities, and extracurricular programs at the University's main campus in Boston.

Alternative Freshman-Year students are encouraged to make extensive use of the up-to-date programmed learning resources available for self-instruction through Northeastern's Learning Resources Center on the Boston campus. For additional assistance, Alternative Freshman-Year students are also frequently referred to the Academic Assistance Center and/or the Math/Writing Center on the Boston campus. A third and very important resource, the Counseling and Testing Center, is also available to students for personal and academic counseling as well as for vocational testing and counseling.

■ **Sample One-Year Program: Business Track**

First Quarter		Third Quarter	
Course	Q.H.	Course	Q.H.
Integrated Language Skills A	4	Economics I (or directed elective)†	4
Fundamentals of English I	4	History of Civilization B	4
Mathematics I*	4	Survey of Business and Management (or directed elective)†	4
History of Civilization A (or)		Mathematics for Business*	4
Economics I (or)			
Survey of Business and Management	(4)		
Total Quarter Hours	12–16	Total Quarter Hours	16
Second Quarter			
Course	Q.H.		
Integrated Language Skills B	4		
Fundamentals of English II	4		
Mathematics II*	4		
History of Civilization A (or)			
Economics I (or)			
Survey of Business and Management	4		
Total Quarter Hours	16		

* Students will be placed in one of three mathematics courses, depending on placement test results. Those receiving advanced placement have the option of completing MTH 1114 during the freshman year.

† All business track students will complete HST 4110 in either fall or winter quarter. ECN 4601 and MGT 4110 may be taken in fall, winter, or spring quarter.

■ **Sample One-Year Program: Criminal Justice, Education, or Arts and Sciences Track**

First Quarter		Third Quarter	
Course	Q.H.	Course	Q.H.
Integrated Language Skills A	4	History of Civilization B	4
Fundamentals of English I	4	Introduction to Politics	4
Mathematics I*	4	Sociology II (or directed elective)	4
Sociology I	(4)	Directed elective†	4
Total Quarter Hours	12–16	Total Quarter Hours	16
Second Quarter			
Course	Q.H.		
Integrated Language Skills B	4		
Fundamentals of English II	4		
History of Civilization A	4		
Sociology II (or)			
Mathematics II	4		
Total Quarter Hours	16		

* Students will be placed in one of two mathematics levels, depending on placement test results.

† The directed elective is to be chosen with consideration for the student's intended major.

■ Sample One-Year Program: Health Sciences Track

First Quarter

<i>Course</i>	<i>Q.H.</i>
Math II	4
Fundamentals of English I	4
Pre-Chemistry	5
Integrated Language Skills Development I	2

Total Quarter Hours	15
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Third Quarter

<i>Course</i>	<i>Q.H.</i>
Basic Animal Biology I	4
General Chemistry II	5
Freshman English II	4
Directed elective	4

Total Quarter Hours	17
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Second Quarter

<i>Course</i>	<i>Q.H.</i>
Fundamentals of Mathematics	4
General Chemistry I	5
Integrated Language Skills Development II	2
Fundamentals of English II	4

Total Quarter Hours	15
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Fourth Quarter

<i>Course</i>	<i>Q.H.</i>
Basic Animal Biology II	4
Functions and Calculus	4
Directed elective	4

Total Quarter Hours	12
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■ Tuition and Fees

Tuition and fees for the Alternative Freshman-Year Program are the same as those for students in the Basic, or Day, Colleges. Payment of the standard tuition during the first three academic quarters of residence entitles students to forty-eight credit hours of instruction. Thus, those who take the forty-four programmed credits are entitled to a four-quarter-hour tuition adjustment at the regular freshman-year rate.

Students taking the curriculum specified for the health sciences pay the standard tuition for each of their first three quarters of residence, even though the academic work required in this curriculum is distributed over four consecutive quarters. Alternative Freshman-Year students in the health sciences curriculum are *not* charged additional tuition for their fourth quarter in residence and do not receive a tuition adjustment.

■ Application Procedure

For further information on the Alternative Freshman-Year Program, or to request an application, please write or call:

Department of Undergraduate Admissions
 Northeastern University
 360 Huntington Avenue
 Boston, MA 02115
 617-437-2200

ROTC, Military Officers' Education Program



Army

Anthony J. Hoss, Lt. Col., U.S. Army, M.A., *Professor and Chairman, Department of Military Science*

■ General Objectives

The Department of Military Science offers a diverse and exciting leadership development program and is available on a voluntary basis to all full-time students. The program's undertaking is to commission the future officer leadership of the United States Army and to inculcate aspects of leadership that are sought after in many careers: the principles of personnel management, a ready acceptance of responsibility, the desire to achieve, personal confidence, and loyalty. Completion of the program can lead to a commission as a second lieutenant in either the active or reserve components of the U.S. Army.

The Reserve Officers' Training Corps (ROTC) staff consists of active Army officers and noncommissioned officers assigned by the Department of the Army.

■ **Courses of Study**

The program consists of the Basic Course (freshman and sophomore years) and the Advanced Course (middles, junior, and senior years) and complements the co-op program by tailoring the courses to the student's schedule.

Enrollment in the Basic Course is voluntary and is open to all full-time students who are United States citizens. Students do not incur a military obligation by participating in the Basic Course.

The Advanced Course is open to all qualified students who meet these prerequisites: completion of the Basic Course or approved equivalent, or prior honorable military service; physical aptitude and medical requirements; and age requirements. Advanced Course students receive a \$100-per-month stipend, up to \$1,000 per year. They are also paid for the six-week advanced camp normally attended between their junior and senior years.

■ **ROTC Scholarships**

The Army ROTC scholarship pays for tuition and provides an allowance for textbooks and laboratory fees, plus an additional living allowance of \$100 per month up to \$1,000 for each year the scholarship is in effect. Selected four-year scholarship winners may also qualify for full room and board during their first year. Scholarships are available in varying lengths and cover the cadet's remaining academic years. Full-time students meeting specific requirements may apply for scholarships covering their last four, three, or two academic years. These are merit-based scholarships, and a student's earnings during cooperative work periods do not reduce scholarship payments.

■ **Veterans and Transfer Students**

Honorably discharged veterans (enlisted) are a vital part of our cadet corps and will receive special consideration for ROTC entry.

Transfer students, whether or not previously enrolled in ROTC, are also welcome to join our program. They should contact the Department of Military Science concerning their options for program entry.

■ **Uniforms and Equipment**

Uniforms are issued without cost to ROTC cadets. A \$35 deposit is required to ensure the return of the loaned property in good condition. Loss or damage to Army equipment, exceeding the deposit, will be charged to the student.

■ **Academic Credits**

Regulations of the individual Basic Colleges prevail for ROTC graduation credit. However, students may individually petition their academic department for acceptance of certain courses for graduation credit.

Air Force

William R. Laurier, Col., U.S. Air Force, M.S., *Professor and Chairman, Department of Aerospace Studies, Boston University*

The Air Force Reserve Officers' Training Corps (AFROTC) program offers students an opportunity to earn a commission in the United States Air Force. The student is commissioned as a second lieutenant upon completion of both the Aerospace Studies (AS) curriculum and the requirements for an undergraduate or graduate degree. Northeastern University students may enter the AFROTC program as members of either a four-year or a two-year program. Participation in AFROTC by nonscholarship students during the first two years of the four-year program carries no commitment to serve in the Air Force.

AFROTC classes and leadership laboratories are conducted on the Boston University campus at 156 Bay State Road. For further information, telephone 617-353-4705.

■ The Four-Year Program

Undergraduates may join the four-year AFROTC program by registering for the appropriate Aerospace Studies classes. Students from all academic disciplines, including five-year co-op, may register. Preferred entry is the first quarter of the first year, although students may enter as late as the first quarter of the sophomore year.

Freshman-year classes focus on the functions, organizations, and hardware of the Air Force. Sophomore classes concentrate on the history of aerospace power. Complementing the academic classes is a weekly leadership laboratory, during which students are introduced to Air Force customs, courtesies, drill, ceremonies, and lifestyles.

The Air Force uniform and AFROTC books are provided to the student free of charge except for a refundable uniform deposit.

Continuation beyond the sophomore year is not guaranteed. Factors considered include leadership potential, academic performance, field training evaluations, and results of a physical examination.

The nonflying commissioned graduate incurs a four-year active duty service commitment. Navigators incur a five-year post-training commitment, and pilots incur an eight-year post-training commitment.

■ The Two-Year Program

Students unable to participate in the four-year AFROTC program are eligible for the two-year program. Prerequisites for entry into the two-year program include at least six remaining academic quarters of undergraduate or graduate study, meeting Air Force physical standards, good moral character, and successful completion of six weeks of field training. Applications for the two-year program require several months for processing. Prospective two-year program members should contact the University AFROTC detachment at least six months prior to proposed entry.

■ Scholarships

Academic scholarships are available for those who qualify. The College Scholarship Program pays for tuition, textbooks, required fees, and a \$100-per-month, tax-free subsistence allowance. Most scholarships are awarded for four years, starting with the freshman year. Application is made while the student is a senior in high school. Application forms should be available in your guidance counselor's office or from your local Air Force recruiter. Scholarships are also available for students already in college. Students may apply for a three-and-a-half-, three-, two-and-a-half-, or two-year scholarship. For further information, telephone 617-353-9377.

The Naval Reserve Officers' Training Corps (NROTC) programs, through instruction in various subjects in naval science and exposure to operating elements of the Navy and Marine Corps, provide young men and women a number of paths leading to a commission as an officer in either of these services. Upon completion of both the Northeastern University and the NROTC requirements, newly commissioned officers will have the opportunity to serve aboard combatant ships, with the nuclear submarine force, as pilots or flight officers in naval aviation, or with the Marine Corps. Students at Northeastern may enroll in the crosstown program with the Department of Naval Science at Boston University.

■ Available Programs

NROTC has two basic programs. The Scholarship Program provides full tuition, books and fees, and a \$100 per month stipend for four or two years of instruction at Northeastern University. These scholarships are granted as a result of annual nationwide competition. The College Program provides students with naval science texts, uniforms, and a \$100 per month stipend during the last two academic years. Full-tuition scholarships may be awarded to selected applicants who have been active in the College Program for at least one semester. Applications for the College Program are made through the Department of Naval Science at Boston University.

Students on a five-year co-op program may accept and use a Navy scholarship. Tuition is paid during those quarters when the student is actually in classes at Northeastern, and progression through the program of naval science courses is determined by completion of academic and professional requirements.

All NROTC programs require some professional training, depending on the program and the time of entry. This training occurs during the "cruises" with the operating forces of the Navy or Marine Corps. Normally, there are three cruises of four to six weeks each for scholarship students, and one cruise of four to six weeks for College Program students.

Upon graduation and completion of NROTC requirements, scholarship students will be obligated to serve on active duty for four years, College Program students for three years. Students accepted for flight training will be required to serve on active duty for six years following completion of flight school.

■ Eligibility Requirements

To be eligible for the Naval ROTC program, students must be all of these:

- A citizen of the United States;
- At least 17 years old and not more than 25 years old (27½ for College Program) by June 30 of the calendar year in which graduation and commissioning are anticipated;
- Physically qualified in accordance with the standards for entrance;
- Enrolled in a program leading to a bachelor's degree;
- An entering first-year student (students on five-year programs may enter at the beginning of the sophomore year) at Northeastern University.

In addition, there exists a two-year NROTC program for sophomores/middlers who did not join NROTC by the start of their sophomore year. These students are sent to a six-week Navy summer school in Newport, Rhode Island, at full midshipman's pay and allowances, to catch up in the naval science courses. Both scholarship and College

Program options are available; selection for this program takes place in the spring, and all applications must be submitted by late February of the sophomore or middler year.

■ Application Procedure

Students should visit or call the Boston University Naval Science Department Office at the address listed below prior to registration day to initiate application procedures.

If a student is beyond the first quarter of the freshman year, or has any questions, he or she should telephone, write, or visit the office below. All inquiries will receive immediate attention.

Commanding Officer
NROTC Unit, Boston University
116 Bay State Road
Boston, MA 02215-1796
617-353-4232

■ Course of Instruction

The NROTC program of instruction encompasses the science of nautical matters and principles of management, both of which are vital to the art of being a naval or marine officer. The program has three interactive and equally important aspects. The first consists of the academic major with subjects taught by the University. These subjects must include: two quarters each of a modern Indo-European language and computer science; three quarters each of calculus and physics (for the Scholarship Program) or college math and physical science (non-Scholarship Program), English, and American military history/national security policy. The second aspect consists of the professional academic subjects taught by the Department of Naval Science. The third aspect consists of leadership laboratories (two hours a week during the school year), indoctrination tours conducted at Navy/Marine Corps facilities, and cruises aboard Navy ships.

All students in the NROTC program must take the following naval science courses prior to graduation:

Introduction to Naval Science
Naval Ships Systems I
Naval Ships Systems II
Seapower and Maritime Affairs*
Navigation and Naval Operations I (Navy option only)
Navigation and Naval Operations II (Navy option only)
Modern Warfare (Marine option only)
Leadership and Management I (Navy option only)*
Leadership and Management II (Navy option only)
Amphibious Warfare (Marine option only)*

These courses are taught by NROTC staff officers on the Boston University campus. Northeastern NROTC students attend classes with midshipmen from Boston University and Boston College. Naval science classes are offered in the fall and winter quarters only.

* Certain Northeastern courses may be substituted for these naval science courses.

Basic College Compensatory Programs

Basic College Compensatory Programs in mathematics and English are for freshmen native speakers of English whose reading, writing, or mathematical skills need to be strengthened. (Non-native speakers should see page 237 for information about the English-as-a-Second-Language Proficiency Requirement.)

The University uses one or more of three criteria to determine which freshmen participate in the compensatory programs: precollege academic credentials, tests administered during orientation week, or performance in Freshman English 1 (ENG 1110).

In general, the program consists of six courses, each offering four hours of credit. The courses must fit into the sequences below.

Fall*

MTH 1000	Mathematical Preliminaries 1
ENG 1110	Freshman English 1†
or	
ENG 1013	Fundamentals of English 1
ED 1003	Reading/Study Skills

Winter*

MTH 1010	Mathematical Preliminaries 2
ENG 1014	Intensive Writing

Special Note Successful completion of Mathematical Preliminaries 1 and 2 is a prerequisite for:

MTH 1101, MTH 1106, MTH 1107, and MTH 1108	Nonbusiness mathematics sequence
MTH 1113 and MTH 1114	Business mathematics sequences

Special Note A passing letter grade in Freshman English 1 or Intensive Writing is a prerequisite for:

ENG 1111	Standard Freshman English 2
ENG 1111–ENG 1113	Engineering sequence
ENG 1111–ENG 1114	Engineering Technology sequence

* The same sequence is offered winter/spring for students who enter in January.
† Students whose work in this course is unacceptable for success in Freshman English 2 (ENG 1111) will receive a grade of S and must complete Intensive Writing (ENG 1014).

■ Compensatory Programming in the Basic Colleges

Acceptance for credit is determined by the faculties of the individual colleges and is therefore subject to change. The chart below outlines the Basic Colleges' policies on compensatory courses.

	English 1 (ENG 1110/ 1013)	English 2 (ENG 1014)	Mathematical Preliminaries 1* (MTH 1000)	Mathematical Preliminaries 2* (MTH 1010)	Reading/ Study Skills (ED 1003)
<i>Arts and Sciences</i>	yes	yes	yes	yes	yes
<i>Bouvé: Physical Therapy</i>	yes	yes	no	no	no
<i>Bouvé: Physical Education</i>	yes	yes	yes	yes	yes
<i>Bouvé: Recreation and Leisure Studies</i>	yes	yes	no	no	no
<i>Bouvé: Teacher Preparation</i>	yes	yes	yes	yes	yes
<i>Business Administration</i>	yes	yes	yes	yes	no
<i>Computer Science†</i>	n/a	n/a	n/a	n/a	n/a
<i>Criminal Justice</i>	yes	yes	yes‡	yes‡	yes
<i>Engineering†</i>	n/a	n/a	n/a	n/a	n/a
<i>Engineering Technology</i>	yes	yes	n/a	n/a	n/a
<i>Nursing</i>	yes	yes	no	no	no
<i>Pharmacy and Allied Health Professions</i>	yes, but w/o credit§	yes	no	no	no

* Asterisked courses are graded pass/fail and therefore are not included in the student's quality-point average. A *yes* designates acceptance for credit, a *no* nonacceptance, and an *n/a* not applicable.

† This college offers MTH 1120 and MTH 1121, a course sequence in college calculus with algebra and trigonometry, to students who test deficient in mathematics. The sequence involves extra work in algebra and trigonometry and covers the same material as the regular freshman calculus sequences.

‡ Students whose diagnostic examinations suggest a need for basic mathematics may elect MTH 1000 or MTH 1010 to prepare for Fundamentals of Mathematics (MTH 1106).

§ This college will accept for credit only ENG 1110 or ENG 1014 (with a letter grade). Students who complete English courses must still take a four-credit English elective.

Radiologic Technology Program (University College)

■ Professional Preparation

Aims The radiologic technologist is an important member of any health-care team. Combining a technical background with extensive training and skills, the radiologic technologist is trained to use X-rays to produce a clear picture or radiograph of a patient's tissue, bone, or organ structure for evaluation and interpretation by a physician. Northeastern University's Radiologic Technology Program is designed to offer students the opportunity to prepare for entry-level employment opportunities as radiologic technologists.

A View of the Program The Radiologic Technology Program at Northeastern offers a combination of academic preparation and clinical experience. Enrolling a new class of students in September of each year, the program consists of lecture and laboratory sessions held at Northeastern and periods of clinical training at selected radiology departments in Massachusetts hospitals. The program requires twenty-seven months of continuous study. A two-week orientation period is held prior to the beginning of classes each September.

Degree Upon satisfactory completion of the program, students receive an associate in science degree and are eligible to sit for the American Registry Examination for certification as radiologic technologists.

Graduates may, if they wish, seek career opportunities in the diagnostic environments of clinics and hospitals. However, they may also explore opportunities for employment in production and quality control in industrial firms. Graduates may also decide to consider a program in radiation therapy, nuclear medicine, or ultrasound technology, or they may choose to continue their education by applying for acceptance to a bachelor's degree program in health science or health management.

■ Accreditation

This program is accredited by the Committee on Allied Health Education and Accreditation of the American Medical Association and by the Joint Review Committee on Education in Radiologic Technology.

■ Application Procedure

For further information regarding the Radiologic Technology Program, or to request an application for admission, please contact:

Radiologic Technology Program
Northeastern University
266 Ruggles Building
Boston, MA 02115
617-437-2818

Part-Time Programs at Northeastern

University College

University College is the part-time undergraduate division of Northeastern University and a long-time leader in educational programs for adults. The college's programs are constantly evaluated and updated to satisfy the changing professional, cultural, and social needs and interests of adults.

Undergraduate degree programs have been developed in over thirty major fields of study in the areas of business administration, criminal justice and security, health professions and sciences, and liberal arts. Courses are offered on a convenient, part-time basis throughout the week, during the evening, as well as early in the morning and on weekends. Students may take single courses, pursue a certificate program, or enroll in full degree programs leading to the associate's or bachelor's degree. Short-term seminars are also offered for credit. Classes are scheduled at a number of accessible locations.

Academic advisers are available by appointment to talk with students about courses, transfer credit, degree requirements, and other matters of individual concern. University College advisers are present at the Boston and Burlington campuses weekdays, by appointment. To arrange for an appointment at a specific campus, please telephone the appropriate number below:

Telephone Numbers and Hours

Main Boston campus	617-437-2400 (voice) 617-437-2825 (TTY) 8:30 a.m.–7:00 p.m.
Burlington campus	617-272-5500 8:30 a.m.–4:30 p.m.
Downtown Boston campus	617-367-6373 8:30 a.m.–4:30 p.m.
All other branch locations	617-437-5544 8:30 a.m.–7:00 p.m.

During registration, the advisers at Boston are available on a walk-in basis or to answer questions by phone from 9:00 a.m. to 7:00 p.m. During this time, advisers at all campuses will advise students on course selection and explain registration procedures. There is no charge for these services.

University College also offers a variety of career and other support services, including a career-development course, job-search seminars, and counseling, testing, and placement services. For a copy of the current *University College Bulletin*, contact:

University College
Ruggles Building
Northeastern University
360 Huntington Avenue
Boston, MA 02115
617-437-2400 (voice)
617-437-2825 (TTY)

School of Engineering Technology

In addition to the full-time curricula described earlier in this bulletin, the School of Engineering Technology offers interdisciplinary programs providing technological and professional development opportunities to meet special needs of the part-time student. These programs provide educational opportunities for students who must pursue full-time employment but who desire to initiate or continue their academic work.

The part-time program includes pretechnology preparatory courses and degree programs leading to the Associate in Engineering (A.E.), the Associate in Science (A.S.), and the Bachelor of Engineering Technology (B.E.T.). The A.E. degree may be earned in computer technology and in architectural, environmental, structural, surveying and highway, electrical, and mechanical engineering technology. The A.S. degree may be earned in telecommunications and energy systems. Students seeking further education may earn the B.E.T. degree in computer technology and in mechanical, electrical, mechanical-structural and manufacturing, engineering technology.

School of Engineering Technology advisers are available at 120 Snell Engineering Center Monday through Thursday from 8:30 a.m. to 8:00 p.m., Friday from 8:30 a.m. to 5:30 p.m., and Saturday from 8:00 a.m. to 2:00 p.m.

For a copy of the current School of Engineering Technology bulletin or further information, please contact:

Northeastern University
School of Engineering Technology
120 Snell Engineering Center
Boston, MA 02115
617-437-2500 (voice)
617-437-2852 (TTY)
617-437-2501 (FAX)

Division of Continuing Education

Northeastern University established continuing education programs over twenty-five years ago to provide a practical, high-quality career-related education in business and industry consistent with the University's tradition of adult education. The mission of the division is to be a leader in nondegreed continuing education for the career professional. Courses are taught primarily by practitioners in their respective fields. Program development, courses, and seminars are based on market needs and wants and are offered at convenient off-campus locations and at company sites. The division continues to enhance Northeastern University's regional and national reputation as a leader in continuing education via such technological advances as microwave and satellite transmission. For further information on the programs below, telephone the division office at 617-437-5828.

State-of-the-Art Program The State-of-the-Art Program offers evening courses, seminars, and on-site training designed for working professionals seeking practical, hands-on education in a job-related area of technology. The curriculum includes: AI/expert systems, high-level computer languages, and certificate programs in data communications, biotechnology, computerized automation technology, telecommunications, VLSI design, microelectronics/semiconductor science, microwave engineering technology, artificial intelligence, assurance technology, software engineering, and technology management. For further information, telephone the State-of-the-Art Program at 617-329-8775.

Building and Construction Technology Program Designed for a broad spectrum of professionals either presently in or considering some aspect of the building technologies, the course offerings range from introductory to advanced and are conducted in an intensive, total-immersion setting. Evening courses, on-site training, and seminars include architecture, building inspection, building technology, construction law and management, fire protection, engineer-in-training license examination preparation, and Massachusetts electrician's code review. Certificate programs are offered in HVAC systems design, facilities management, construction superintendency, building inspection, building technology, and real estate development. For further information, telephone 617-329-8000.

Paralegal Program The Paralegal Program offers a twelve-week Paralegal Certification Program and specialist courses on specific legal topics such as legal research/writing, real estate, family law, litigation, and labor law. For further information, telephone 617-329-8000, ext. 47 or ext. 24.

Test Preparation Program The Test Preparation Program offers courses to help prepare for the LSAT, GMAT, GRE, and SAT examinations, providing the participant with an in-depth exposure to the subject matter. For further information, telephone 617-329-8000, ext. 47 or ext. 24.

Urban Mass Transit Program The Urban Mass Transit Program is designed to develop improved methods of meeting unique challenges facing management in the urban mass transportation industry. The goal of the program is practical education in modern management theory and practice. For further information, telephone 617-329-8000, ext. 22.

Insurance and Financial Services Institute Established to foster excellence in the insurance and financial services communities in the Boston area, the institute offers courses and seminars in general insurance, risk management, insurance licensing, and financial services. These study programs assist those seeking to develop or to update professional credentials. For further information, telephone 508-533-5101.

Network Northeastern Developed to serve the need of the high-technology community for flexible educational and training programs, Network Northeastern broadcasts from the University campus directly to company sites and to the Burlington and Dedham campuses. Live classroom instruction is telecast in color to these sites, where it is viewed in reception rooms equipped with television monitors and a telephone talk-back system. Videotapes of missed classes are provided, and a courier service delivers and collects homework assignments and serves as a link to the registrar, bookstore, and other university services.

Network Northeastern offers courses in graduate engineering, computer science, undergraduate engineering technology, the State-of-the-Art Program, and graphic arts. In 1987, Northeastern became the first university in eastern Massachusetts to install a Ku-band satellite dish. This enables the University to broadcast courses throughout the continental United States and to redistribute live satellite programs to subscribing company sites via the microwave system. Via the satellite, the Network is a local distributor for Institute of Electrical and Electronics Engineers (IEEE) videoconferences and other satellite providers. For further information on Network services, telephone 617-437-5620.

Graduate and Professional Schools at Northeastern

The following graduate and professional schools of the University offer day and evening degree programs.

■ Arts and Sciences

The Master of Arts degree may be earned in economics, English, history, journalism, political science, psychology, sociology, social anthropology, and writing. The Master of Science degree is available in biology; chemistry; economic policy and planning; law, policy, and society (interdisciplinary program); mathematics; and physics. The Master of Science in Health Science, the Master of Journalism (in news media management), the Master of Public Administration, and the Master of Technical and Professional Writing degrees are also offered. In addition, students may earn the certificate of advanced graduate study in literary study. The Doctor of Philosophy degree is available in biology; chemistry; economics; law, policy, and society (interdisciplinary program); mathematics; physics; psychology; and sociology. An interdisciplinary program in clinical chemistry is also available. Nondegree certificate programs are also available in economics of manpower and development planning, technical writing, and writing. Most programs may be completed through either full- or part-time study.

■ Boston-Bouvé College of Human Development Professions

The Master of Science degree may be earned with specialization in counseling psychology, human resource counseling, rehabilitation counseling, exercise science, physical education, speech-language pathology and audiology, or recreation, sport, and fitness management. Programs may be completed through full- and part-time study.

The Master of Education degree may be earned with specialization in consulting teacher of reading, curriculum and instruction, educational research, human development, rehabilitation administration, special education, school counseling, school adjustment counseling, and college student personnel counseling. The certificate of advanced graduate study is offered in the areas of counseling psychology, human services specialist, school psychology, educational administration, and rehabilitation. The Doctor of Education degree may be earned in counseling psychology, educational administration, or rehabilitation administration.

■ Business Administration

A Master of Business Administration degree may be earned through any one of five M.B.A. programs. The Graduate School of Business Administration offers a variety of programs to meet the needs and schedules of graduate business students. Two full-time program alternatives are offered: the twenty-one-month Cooperative Education M.B.A. Program, which includes a six-month, paid professional work assignment; or the two-year, traditional Full-Time M.B.A. Program, which may include administrative, research, or teaching assistantship opportunities. Individuals who wish to continue their full-time job responsibilities while earning an M.B.A. degree may consider the evening Part-Time M.B.A. Program of study, the eighteen-month Executive M.B.A. Program for upper-level managers, or the accelerated part-time High-Technology M.B.A. Program for qualified technical professionals.

In addition, for individuals who already hold M.B.A. degrees, there is a nondegree program for advanced study in business administration leading to the Certificate of Advanced Study in Business Administration.

Center for Management Development Sponsored by the College of Business Administration, the Center for Management Development offers programs designed to provide opportunities for professional growth for middle and senior-level managers. The programs, scheduled throughout the academic year, include the Executive Development Program, the Management Workshops, and custom-designed programs. Participants are sponsored by their employers.

The Executive Development Program is a graduate-level course for managers who have had responsibility for a major task, function, department, division, or independent enterprise. Five weeks of in-residence instruction are extended over a period of four months in one of three sessions beginning in December, January, or March. All sessions are scheduled at Phillips Academy in Andover, Massachusetts.

The Management Workshops offer middle-level managers comprehensive study in major areas of business through two different graduate-level programs. Scheduled at Northeastern's executive education facility in Dedham, Massachusetts, the Management Workshop and the Management Workshop-High Tech are each held one day per week (Fridays or Mondays) for twelve consecutive weeks from September to June.

The center also designs and conducts special programs for a wide range of business organizations, either for in-house implementation or at a Northeastern University executive education facility. For further information, telephone the Center for Management Development at 617-437-3272.

■ **Computer Science**

The College of Computer Science offers both full- and part-time programs leading to Master of Science and Ph.D. degrees in computer science. Students may specialize in theory, systems, software, databases, artificial intelligence, or communications and networks.

■ **Criminal Justice**

The College of Criminal Justice offers both full- and part-time programs leading to a degree of Master of Science in Criminal Justice. Students enrolled in the Master of Science program in criminal justice may choose from among several areas of specialization: administration and planning; criminology and research; security administration; and a multidisciplinary concentration developed with a faculty member to suit the individual's needs.

■ **Engineering**

The Master of Science degree may be earned, with specification in the field of chemical engineering, civil engineering, computer systems engineering, electrical engineering, industrial engineering, engineering management, information systems, or mechanical engineering. A special five-year honors program in mechanical, industrial, or electrical engineering is offered, leading to both bachelor's and master's degrees; the Professional Engineer degree in mechanical, industrial, or electrical engineering; the Doctor of Engineering degree in chemical engineering; and the Ph.D. degree in chemical, civil, electrical, industrial, or mechanical engineering.

■ Law

The School of Law offers a full-time program of professional instruction leading to the degree of Juris Doctor (J.D.). It is fully accredited by the American Bar Association and is a member of the Association of American Law Schools. There are no courses for part-time or evening students.

Unique among American law schools, Northeastern's School of Law features cooperative legal education. Under this plan, each student works full-time at law for participating employers for four calendar quarters during his or her second and third years, alternating with equal periods of full-time course work. This blending of academic study and practical legal work experience, after a traditional first year of intensive academic study, is designed to offer the best possible preparation for the actual practice of law. Cooperating employers include large and small private firms, government agencies, legal assistance and public defender organizations, judges, unions, corporate law departments, and virtually every type of legal practitioner. Employers are located nationwide.

Because the school operates twelve months a year, students complete the program on the same schedule as those in more traditional law schools.

■ Nursing

The Graduate School of Nursing offers a master of science degree with specialization in community health, critical care, primary care, and psychiatric-mental health nursing. The 52 quarter-hour curriculum is designed so that students may pursue either full-time or part-time study. Full-time students may expect to complete the degree requirements in one calendar year. The Master's Program helps to prepare students for advanced nursing practice as clinical specialists, managers, and educators.

The Certificate of Advanced Graduate Study is offered in community health, critical care, primary care, and psychiatric-mental health nursing for those who already hold an M.S. degree in nursing.

■ Pharmacy and Allied Health Professions

The Master of Science degree is offered on a part-time and full-time basis in biomedical science, hospital pharmacy, medical laboratory science, medicinal chemistry, pharmaceuticals, toxicology, and pharmacology. The Master of Health Professions is also offered with the following options: general, health policy, physician assistant, and regulatory toxicology. The Ph.D. degree is offered in biomedical science with specialization in medical laboratory science, medicinal chemistry, pharmaceuticals, pharmacology, and toxicology. The clinically oriented Doctor of Pharmacy (Pharm.D.) degree is offered as a full-time program to graduates of accredited colleges of pharmacy. Five nondegree options are also available, with certificates in health record administration, medical technology, perfusion technology, physician assistant, and respiratory therapy.

■ Professional Accounting

The program for the Master of Science in Accounting degree is a full-time, highly concentrated fifteen-month program designed for arts and sciences and other nonaccounting majors who are interested in careers in professional accounting. The five-quarter course includes a three-month internship with a leading CPA firm in the middle or winter quarter, thus providing both practical experience and financial support. New classes start in mid-June of every year.

Academic Research

Research, whether performed in the laboratory, in the library, or in the field, is vital to a college education. It stimulates all participants and ensures a thriving academic atmosphere. Through research, faculty members as well as students stay abreast of the most recent developments in their particular fields. Faculty who disseminate this knowledge through publishing, speaking, and teaching help ensure that students receive a first-rate university education.

At Northeastern, research and scholarly endeavors are actively encouraged. Each year, the faculty receive funding for an ever-increasing number of research projects. Sponsorship comes from a variety of sources, including federal agencies, private industry and foundations, and the University itself.

While much of this research is carried out by faculty members, their graduate students, and postdoctoral research associates, ample opportunities exist for undergraduate students. Research participation can be included as part of regular academic programs, as specially designed independent studies, or through cooperative work assignments. Research activities are encouraged and are limited only by the student's own motivation, curiosity, and creativity.

Northeastern University has numerous distinguished faculty members, many of whom have received prestigious awards, including Sloan Scholarships, Guggenheim Fellowships, and National Institutes of Health Research Career Awards. Faculty members lecture the world over—from just across the Charles River in Cambridge, Massachusetts, to across the Pacific Ocean in Sydney, Australia.

Many faculty also serve as consultants to government, business, and industry and participate on a variety of national and international committees. At the same time, Northeastern considers education its primary mission, and students will always find an enthusiastic and accessible faculty to answer questions, solve problems, and stimulate inquiring minds.

Current research spans almost every academic and professional field and is not limited to laboratory investigations or the hard sciences. Every department of every college at Northeastern carries out some basic or applied research projects.

A brief summary of some of the topics currently under investigation by faculty and students follows. Perhaps something here will spark hidden interests. Students desiring to explore the opportunities for research participation should inquire at the appropriate departmental offices.

■ Arts and Sciences

In the College of Arts and Sciences, research projects reflect the diversity of the college's nineteen departments. Research in the arts, the humanities, and the natural and social sciences includes such diverse topics as Chinese social sciences, plant molecular biology, nature in twentieth-century American poetry, visual attention and color vision, electromagnetism, human capital, optical emission spectroscopy, and the impact of the social policy of deinstitutionalization on children's services, to name just a few. The college's interdisciplinary interest in marine sciences is represented by the Marine Science Center, where faculty and graduate students conduct research in marine biology, botany, ecology, chemistry, and geology.

■ **Engineering**

Research in the College of Engineering encompasses some of today's most important technological subjects. Robotics, telecommunications, signal processing, electromagnetics, materials, and theoretical aspects of computer engineering and computer-aided design are some of the major fields of interest within the college. Not all studies are high-technology oriented. Indeed, faculty pursue projects that range from the study of the electrical properties of human blood vessels to the development of methods for treating toxic waste waters. These seemingly diverse research areas do have one thing in common: they attempt to improve the quality of life.

■ **Computer Science**

Northeastern University's College of Computer Science represents one of today's most active technological fields. Research interests of the faculty include artificial intelligence (including expert systems, connectionist models, and pattern recognition), theory (including cryptography, complexity, and analysis of algorithms), programming languages and systems, and graphics and image processing. Also of interest are a variety of interdisciplinary studies: AI and law, medicine, and business; VLSI; and studies with psychology and linguistics.

■ **Criminal Justice**

The College of Criminal Justice stresses both theoretical and applied research. Lawyers, statisticians, social and behavioral scientists, and systems specialists all serve on the faculty and participate in numerous research activities. Some research directions currently pursued by faculty include juvenile delinquency, contemporary police systems, private security, terrorism, legal studies, and crime victims.

■ **Law**

The School of Law's research activities concentrate on an investigation of the operation and impact of the legal system from a variety of interdisciplinary perspectives—including those of the historian, the economist, the social theorist, and the political scientist. Other research focuses on current legal issues, the problems of communicating lawyering skills, and the theory and practice of supervision.

■ **Boston-Bouvé**

Research in the Boston-Bouvé College of Human Development Professions is broad in range and diverse in approach. Often a focus in research is the role of the teacher and the clinician in facilitating changes in human development. Some current research interests include the communication abilities of normal and hearing-impaired individuals, the role of exercise in cardiovascular health and disease, the evaluation of educational practices in the schools, an examination of interdisciplinary approaches to services for the elderly, and an investigation of rehabilitation services for the handicapped in industry.

■ **Nursing**

Research interests in the College of Nursing are directed toward clinical problems, the student population, and the community at large. Other significant interests include cooperative education, issues affecting women (locally, nationally, internationally), the elderly, the development of leadership skills in nurses who are employed in middle-management positions, and adaptation to chronic illness.

■ Pharmacy and Allied Health Professions

Research objectives in the College of Pharmacy and Allied Health Professions have important ramifications for the nation's health. Studies include new ways to analyze antidepressant and anticonvulsant drugs, the study of the pharmacology of benzodiazepine tolerance and dependence, the monitoring of electrophysiological responses of neurons. The development of resistance to drugs and metals by bacteria, the detection of bacteria and viruses in ocean waters, the development of new antihypertensive drug therapies, the development of novel drug delivery systems, and the design of protocols to improve the survival of organ transplants. Other studies include a study of current health policy laws and regulations, theoretical and practical aspects of health information management and job and role delineation. Among the sponsors of the college's work are the National Institutes of Health, the Office of Naval Research, Eli Lilly Co., the American Heart Association, and the American Diabetes Association.

■ Business Administration

Research in the College of Business Administration is partitioned between the theoretical and practical aspects of accounting, finance, management science, general management, human resources, and marketing. New approaches in corporate practice and academic theory are being realized through conclusions reached by a faculty examining such topics as high-technology management, small-business entrepreneurship, and foreign investment in developing countries. Other studies concentrate on transportation problems in the United States, government regulation in industry, and technological forecasting in the high-technology industry. Significant work is also being done by the marketing faculty in the area of survey research.

■ Research Centers and Institutes

Northeastern has several interdisciplinary centers and institutes that do not grant degrees but engage in a variety of research studies in close collaboration with academic departments. The Barnett Institute of Chemical Analysis and Materials Science is concerned with basic research in analytical chemistry and materials science and with applications to problems of social relevance. The institute has developed an international reputation in the fields of separation science, mass spectrometry, amorphous metals, and biochemical analysis. The Center for Digital Signal Processing addresses state-of-the-art hardware and software systems designed to encode, decode, and extract sophisticated information from data originating from a wide variety of applications ranging from radar to electrocardiograms. The Electron Microscopy Center has up-to-date scientific equipment to support training and research activities in cellular and subcellular structures. The Center for Applied Social Research deals with issues of public policy and social research on an interdisciplinary basis. Projects are currently under way in the fields of criminal justice, public safety, social welfare, and education.

Research in the Center for Labor Market Studies is concerned with a wide variety of employment, training, welfare, and human resource issues. The center is recognized as an important regional and national resource for information about educational practices and employment patterns.

The Center for Electromagnetics Research, a National Science Foundation-sponsored cooperative research center, is concerned with advanced training research in such areas as radio-frequency and electrical-discharge phenomena, electro-optics, plasmas, materials, integrated circuits, and computers that are of importance to the electronics and aerospace industries. The center's activities are supported by the federal government and industrial sponsors.

The Center for the Strategic Management of Technology is dedicated to the exploration of expert systems in the factory-of-the-future concept in manufacturing. A total

systems approach is applied that integrates the manufacturing, information, management, and control processes.

The Marine Science Center, located in Nahant, Massachusetts, is the only marine station with a year-round research and teaching facility located on the New England coast north of Cape Cod. The projects carried out there focus on marine ecology, behavior, neurobiology, structural biology, biochemistry, and molecular biology. Its exposed, rocky shore provides a living laboratory for the study of marine animals.

The Cooperative Education Research Center was established to perform research in cooperative education and to respond to the information needs of the co-op community across the country. To fulfill these objectives, numerous studies are under way, and the center maintains a large database of current information about co-op programs and serves as a clearinghouse of publications about co-op.

Support services for research are provided by the University's Division of Research Management, the Division of Academic Computing, and the Division of Laboratory Animal Medicine, and through the collections, reference, and on-line-search services of the University libraries.

Student Support Services and Resources

Student Support Services and Resources at Northeastern

University Libraries

Alan R. Benenfeld, M.S., *Dean and Director*

Together, the collections, services, staff, and facilities of the Northeastern University Libraries provide access to information and an understanding of the organization of the literature and other information resources of the academic disciplines. The library is integral to the academic and research processes, whether these occur in a formal classroom, seminar, or laboratory setting or through individual study and enrichment.

■ Libraries

The University Libraries include seven facilities. On the Boston campus, the Dodge Library is the main library. It houses the materials that support the University's programs in the humanities, social sciences, fine arts, education, engineering, criminal justice, nursing, business, and, at the undergraduate level, the sciences.

Also located on the Boston campus are three libraries that house graduate-level collections in physics and electrical engineering, in mathematics and psychology, and in chemistry, biology, pharmacy, and allied health. In addition, there are three libraries that support the academic programs at the Burlington and Dedham campuses and at the Marine Science Center in Nahant.

A centralized library for the Boston campus is currently under construction. When completed in 1990, it will be the largest academic library building in Boston. A five-level structure with 2,700 seats and shelving for more than 1.25 million volumes, it will triple present library capacities for both seating and on-site collection accessibility. The facility will house the latest in online, telecommunication, and media technologies.

■ Collections

The total holdings of the University Libraries include more than 590,000 volumes, 1,400,000 microforms, current subscriptions to over 5,700 serials and newspapers, and 15,000 audiovisual and computer software titles. Other types of materials, such as technical reports, musical scores, maps, and government documents, are also among the collections. In addition to these print and media holdings, the Libraries subscribe to CD-ROM optical disk databases (large databases published in business, education, technology, and the health sciences).

The collections are especially strong in the sciences, engineering, business, criminal justice, and nursing. Among the many special series available in microformat are important collections in anthropology, education, government, history, literature, and business. In addition to a large reference collection in Dodge, there are specialized reference collections in each of the libraries.

Dodge Library is a federal depository and actively maintains more than a quarter of a million documents, reports, and other publications made available through the U.S. Government Printing Office. It specializes in collecting publications of the U.S. Congress, census materials, Justice Department documents, business and economic publications of the Commerce Department, and the reports of independent and Presidential

commissions. The library also collects United Nations and UNESCO documents and, increasingly, state and local documents.

In the main library, the Learning Resources Center houses an extensive collection of self-paced audiovisual, software, and media materials. Facilities are provided for viewing videodiscs, videotapes, slidetapes, and filmstrips and for listening to records, audiotapes, and compact discs. A Language Laboratory supports the study of modern foreign languages and English as a second language. The center also has a Kurzweil Reading Machine, a computer that translates the printed page into the spoken word for the visually impaired, and several talking-book machines.

The University Archives serves as a depository for the historical records of the University. The collection also includes faculty publications, student yearbooks, Northeastern dissertations and theses, and other University publications.

■ Services

Library staff are available in all service areas to assist students in both retrieving and using the resources in the University Libraries. Computer printouts located at various service areas may be consulted to determine if a book is checked out, on order, on reserve, or in storage. The circulation staff provide a search service for students who are unable to locate a book on the shelf.

A series of publications is prepared by the library staff to acquaint students with the collections in the University Libraries and to help students with their research. These include short guides to types of resources, such as encyclopedias and periodicals, and to resources in particular disciplines, such as economics and nursing, or specific subjects, such as science fiction and Caribbean music.

In each unit of the University Libraries, librarians provide reference assistance. Librarians also provide instruction to groups and to individuals on the bibliographic research process and on strategies for locating and using library resources. Each quarter, a series of tutorials is offered giving students further opportunities to meet with a librarian to discuss particular or specialized research needs.

Computer-assisted instruction, microcomputer facilities, and software for spreadsheet, database, and word processing are available in the Learning Resources Center's Microcomputer Lab. The center's staff also coordinate a peer tutoring program for students in all subjects. Tutoring services are arranged by appointment and are free of charge.

Online retrieval of information from more than three hundred databases is provided, for a fee, through the library's Computer Search Services. Citations, often with abstracts, typically are to journal articles, dissertations, technical reports, and symposia. The librarian who conducts the online search can advise on the cost for this service. Should requested materials not be in the University collections, each library has available for consultation union lists of serials and other research aids. In addition, reference librarians may conduct a computerized search to identify area libraries that own a particular title. Under certain conditions, students may borrow materials through Interlibrary Loan.

■ Boston Library Consortium

Northeastern University is a member of the Boston Library Consortium, a cooperative arrangement among the following academic and research institutions: Boston College, Boston Public Library, Boston University, Brandeis University, MIT, the State Library of Massachusetts, Tufts University, the University of Massachusetts (Amherst, Boston, and Worcester campuses), and Wellesley College. The University's membership in the Boston Library Consortium generally allows for on-site use by, but does not grant borrow-

ing privileges to, students at Northeastern. Some of the consortium libraries and many of the other libraries in the Boston area require that a visiting student present a special pass or letter of introduction. A Northeastern reference librarian can advise about such student visitor policies.

Orientation Programs for Freshmen

Harvey Vetstein, Ed.D., *Associate Dean and Director*

Except for the visits students will make to the Admissions Office, the first opportunity for new students to learn about Northeastern and to meet classmates, administrators, faculty members, and advisers will come during the orientation period.

The program for orientation is planned and supervised by the Director of Orientation, who will see to it that students are introduced to the customs and people that make up the University. At that time, registration, class schedules, and other procedures and details necessary for enrollment will be completed.

During the orientation period, in accordance with a long-standing tradition, students will be welcomed by the President at a special convocation. They also will be able to meet with deans and others who will have important roles in their college careers.

Upperclass students generously volunteer their time to assist in setting up and running programs that provide opportunities for relaxation, recreation, and cultural enrichment. Members of the Dean of Students' staff are available during the orientation period and throughout the year to answer questions and provide assistance.

Office of Freshman Affairs

Anthony J. Bajdek, M.A., *Associate Dean and Director*

The Office of Freshman Affairs bears particular responsibility for monitoring and facilitating the academic progress of freshmen by providing academic and personal counseling and appropriate administrative action. Freshman Affairs applies academic policy, authorizes changes of major (both within and between colleges), and prepares special course schedules for students who change their majors, as well as for those with advanced placement or advanced standing credit. In addition, the Office of Freshman Affairs surveys the academic status of all freshmen every six weeks.

The staff identifies freshmen with deficient academic records for academic probation, authorizes summer corrective work, and reenters eligible students at the freshman level. Midway through each academic quarter, a computer-based Interim Academic Status Report system, involving progress reports prepared by instructors of freshmen, provides detailed evaluations for use by students and the one hundred eighty faculty who serve as their advisers. This evaluation is a preventive measure designed to help detect and assist potentially failing students.

To support the academic progress of freshmen, the Office of Freshman Affairs coordinates the flow of academic information to the faculty who make up the advising system for freshmen and uses appropriate research to measure the success of specific academic support activities and academic programs.

During the course of the year, the staff conducts special seminars designed to assist students identified as having difficulty. When freshmen complete the three academic quarters of their first year, the Office of Freshman Affairs reviews their academic records to determine eligibility for sophomore status.

In fulfilling its responsibilities, the office is not only a most important central support service for freshmen but, just as important, an advocate for the concerns of freshmen.

Academic Assistance Center

Maurice Kaufman, Ph.D., *Director*

The Academic Assistance Center is located at 151 Cahners Hall. The center offers a variety of services for students who wish to improve their academic performance and develop their reading and study skills. It also provides services for students having difficulty with course work and for students with severe learning problems. The staff of the center diagnose academic problems, provide instruction, and make referrals when appropriate.

The center provides the opportunity for peer tutoring in subject areas, intensive reading and study skills workshops, and preparatory and review workshops in selected subjects. Students are encouraged to attend pertinent workshops, which are announced each quarter.

Through its Reading Lab, the center helps students to develop reading comprehension, study habits, vocabulary, and related skills. At the Reading Lab, instruction is supplemented by supervised practice sessions.

Students should contact the center to receive help in diagnosing academic problems, to improve reading and study skills, and to arrange for group instruction or individual tutoring in specific subject areas. The center will refer students to other services available at Northeastern when appropriate. For further information, telephone the Academic Assistance Center at 617-437-4300.

Preprofessional Advising

The Pre-Health Professions Advisory Committee, a University-wide group, offers pre-professional counseling for students interested in a career in medicine, dentistry, or related professional medical fields. The committee members are available to discuss the various medical fields, minimum admissions requirements, and the application process.

For students preparing for a career in law, several faculty members can serve as advisers and resource personnel on related curricular and admissions questions.

In addition, the Department of Graduate Placement Services provides information and advice on procedures for admission, preparation of applications, and the scheduling of appropriate admissions tests.

For further information regarding the above advising, students should contact a counselor through the Office of the Dean of Arts and Sciences, 400 Meserve Hall, telephone 617-437-3980.

The Reading Clinic

The Reading Clinic, located in Lake Hall, offers a wide range of diagnostic and corrective services for a variety of reading and language problems. It is open to persons of all ages, including University students. Faculty members are also qualified to administer such tests as the WAIS, WISC, Binet, ITPA, Bender, and most standardized instruments.

Speed Reading

The Department of Education offers a noncredit course designed to improve skills and speed in critical and pleasure reading. Offered each academic quarter, the course is available at a reduced tuition rate to students, staff, and alumni of the University.

Hearing, Language, and Speech Clinic

Northeastern University's Hearing, Language, and Speech Clinic is the setting for graduate students' early training. Under close observation by clinical supervisors and faculty, students may gain skills essential to progress to a second level of experience at local, off-campus affiliations. The clinic has been accredited by the Professional Services Board of the American Speech-Language-Hearing Association as meeting national standards for clinical facilities.

The clinic, located at 133 Forsyth Building, serves all members of the University community. Diagnostic evaluation and treatment are provided to clients who demonstrate a variety of communication disorders.

Counseling and Testing Center

Judith A. Clementson, Ph.D., *Director*

The Counseling and Testing Center provides a broad range of counseling services for Northeastern students. These services include assistance in choosing an appropriate college major, career planning, resolving personal loss and life adjustment problems, developing satisfying interpersonal relationships, improving study skills, and dealing with difficult feelings such as excessive anxiety or depression. The center provides short-term counseling (twelve sessions maximum); if longer-term treatment is needed, assistance is offered in the form of referrals and resources.

In addition to individual counseling, students may take psychological tests to increase their self-knowledge, join a group of students with whom they share concerns, use self-help tapes, or make use of the center's file of information about careers. There is no charge for these services for enrolled Northeastern students.

Division of Academic Computing

John E. Stuckey, M.A., *Director of Academic Computing*

The Division of Academic Computing (DAC) facilitates the use of computers by Northeastern students and members of the faculty. Some years ago that meant maintaining one good-sized computer, used primarily by those doing advanced work in engineering, mathematics, or the physical or biological sciences. More recently, computing has found productive use in nearly every field of study pursued at the university. At the same time, computing activities have increasingly migrated to personal computers, altering the nature of the need for computing services. DAC is committed to meeting

these new challenges while continuing to support the traditional, computationally intensive uses of computing.

DAC's Personal Computing Initiative supports personal computing with negotiated discounts on hardware and software (available through the Northeastern Computer Store) and with advice, training, and assistance on personal-computer use. The goal is to create an environment as hospitable and supportive as possible to the personal mode of computing.

DAC and its Computing Resource Center (CRC), directed by Jules Maderos, maintain the *lynx* communication system for the exchange of computer mail and conference discussions. Participation in *lynx* is available to any member of the Northeastern community and is free. To sign up for a *lynx* account, bring a valid Northeastern I.D. to 39 Richards Hall during business hours.

The Computing Resource Center also maintains mainframe computing resources (most notably the VAX 8650 system) and numerous public-access laboratories of personal computers and terminals on the Boston, Dedham, Burlington, and Liberty Square campuses. ACCESS, the newsletter of the division, appears seven times a year and includes the locations and facilities of the laboratories and news about other DAC and CRC services.

Center for Instructional Technology

The Center for Instructional Technology (CIT, 412 Dodge Library) is a service unit comprised of three divisions whose mission is to support and enhance teaching and learning activities at the University. CIT comprises the divisions below.

Campus Media Services (AV, 2 Ell Student Building) maintains and coordinates the distribution of all types of audiovisual equipment, accessories, and instructional media materials for the support of classroom instruction and related special events. Equipment typically includes 16mm films, filmstrips, 35mm slides, opaque and overhead projectors; computer display devices; audio cassette-slide synchronizers; audio and video cassette recorders; video cameras, camcorders, monitors, and projectors; microphones, audio mixers, amplifiers, speakers, and portable public address systems; record players; telelecture equipment; and projection screens. Media Services coordinates training in the operation of audiovisual equipment and distributes instructional materials from the collection owned by the University. For further information, telephone 617-437-2294.

Instructional Materials Services (413 Dodge Library) coordinates the preview, rental, and/or purchase of instructional materials such as videocassettes, 16mm films, slides, and filmstrips and provides a reference/resource service for faculty. This area administers the University Instructional Materials collection, which is distributed through Media Services, and maintains a preview room where faculty, staff, and students can schedule time to view materials obtained from their own sources or from the CIT collection. For further information, telephone 617-437-3399.

The Media Production Lab (413 Dodge Library) is a self-help facility designed to provide the University community at minimal cost with equipment and materials necessary for the creation of presentational media. Staff assistants are available to train and aid faculty, staff, and students in the production of overhead transparencies, 35mm photographic slides, miscellaneous graphics and layouts, resized visuals, and dry-mounted and/or laminated displays. For further information, telephone 617-437-2466.

For general information on all three service divisions or the service unit as a whole, telephone 617-437-2150.

Center for Cooperative Education

Paul E. Dubé, M.A., M.Ed., *Director*

Educational institutions and other organizations in the United States and abroad that are interested in exploring the concept of cooperative education, implementing new programs, or expanding and improving already existing ones can utilize the services offered by the Center for Cooperative Education. In addition to providing technical assistance, the center conducts evaluations of cooperative education programs for both educational institutions and employers.

The center staff consists of qualified professionals who are familiar with all aspects of cooperative education. Throughout the year, short-term training programs for both new and experienced coordinators of cooperative programs are offered.

The center also handles special projects for the Division of Cooperative Education and other University organizations. An example is the labor market analyses, in which the center, through an established network of contacts, generates information on employment changes affecting employers in business, high-tech, and the health industries. The collected data are analyzed and interpreted for use by the entire Division of Cooperative Education.

Office of Minority Student Affairs

Ella Robertson, M.Ed., *Director*

The Office of Minority Student Affairs was created in 1968 to respond to the special needs of minority students in the Northeastern community. Contact with minority students is established prior to registration, continues throughout the first academic year at Northeastern, and thereafter is maintained and encouraged as long as the student wishes.

The staff of the Office of Minority Student Affairs provides assistance and guidance in academic matters such as registration, scheduling of courses, choosing an academic program, and developing academic assistance, as well as financial, social, and career counseling. The office is also a link between minority students and other departments within the University and assists in the resolution of problems with faculty, staff, or administrators. In this context, the office helps to make the students' personal and academic environment conducive to educational growth.

The academic performance of all minority freshmen is monitored within the Office of Minority Student Affairs, and the determination is made as to whether or not a student is in good academic standing, to be placed on probation, or to be dismissed from the University. For further information about the Office of Minority Student Affairs, telephone 617-437-2787.

International Student Office

Sally M. Heym, B.A., *Director*

The International Student Office (ISO) provides a wide variety of services for the more than two thousand foreign undergraduates, graduates, and faculty at Northeastern. Specific services range from advising international students on immigration regulations and academic, financial, and personal concerns to issuing forms and official documents that students use to transfer funds from home and travel outside the United States.

The ISO strives to promote cultural understanding among international students and Americans by presenting cross-cultural communication workshops, orientation programs, and quarterly newsletters. The ISO also acts as a liaison between the various

departments and colleges and the many different public and private agencies that have concern for the affairs of foreign nationals in the academic community.

The ISO works closely with the International Student Forum (ISF), an umbrella organization for the many different ethnic organizations on campus. It is the center for many international student activities and sponsors such events as ski trips, dinners, picnics, and a week-long celebration in the spring.

English Language Center

Paul C. Krueger, C.A.G.S., *Director*

The English Language Center provides an important resource for international students at Northeastern. Its goal is to ensure that students who speak English as a second language are proficient enough to carry on full-time studies in a degree program without language-related problems. The center administers the Intensive English Program, which offers three levels of intensive, noncredit courses in English as a second language—beginning, intermediate, and advanced. Intensive English classes are open to undergraduate and graduate students as well as to students who come to Northeastern to study English only. Those students also admitted to a degree program in the University may take, with the approval of the director of the English Language Center, courses for credit while studying Intensive English at the advanced level.

The Intensive English Program offers twenty hours of classroom instruction per week, plus a number of special services. The weekly program includes classes in English structure, reading, writing, listening, and speaking skills, as well as small-group tutorials, practice in a language laboratory and in a writing laboratory, and help from a pronunciation specialist as needed. English Language Center staff work closely with staff from the International Student Office, other offices in Student Affairs, the academic departments, and other University services.

In addition to serving students, the English Language Center provides advice and consultation to the Northeastern community at large. Center staff are available to answer questions from teachers, administrators, and students and are able to design special programs for special needs on short notice.

For more information about the English Language Center, telephone the center at 617-437-2455.

University Health Services/Lane Health Center

Bruce W. Lowney, M.D., *Director*

The Lane Health Center, 135 Forsyth, has staff physicians available on a walk-in basis Monday through Friday, 9:00 a.m. to 4:30 p.m. Laboratory and radiology services are also available during those hours. A nurse is on duty at all times when the clinic is closed.

Specialty clinics in gynecology, orthopedics, sports medicine, surgery, and mental health services have specific hours, and some require referral by a staff physician. Referral for services unavailable in the Health Center can be arranged by a staff physician.

An emergency telephone number (617-437-2772) is answered by the nurse on duty, who will make appropriate arrangements for any urgent situation, nights, weekends, and holidays; all calls from students in university housing should be made through the resident director.

An infirmary is also maintained to care for students living in University housing. These students pay an infirmary fee that entitles them to twenty days of infirmary care at no additional charge (except for special medications).

Students are required to have a record of physical examination on file at the Health Center. Failure to fulfill this requirement will result in an additional fee for a physical examination completed by a staff physician.

Massachusetts state law, Chapter 76, Section 15C, also known as the College Immunization Law, requires that, in order to register for classes, all full-time college students born since December 31, 1956, and all part-time undergraduates and graduates in the health sciences whose duties require patient contact must present evidence that they are immunized against measles, mumps, rubella, diphtheria, and tetanus. (Medical and religious exemptions are allowed but must be documented.)

All full-time undergraduate and graduate students are covered by a special Blue Cross/Blue Shield policy that remains in effect continuously from the day of initial registration until the first of the month following withdrawal, dismissal, or graduation from the University. The fee for this insurance may be waived if proof is shown of comparable coverage.

Office of Services for the Handicapped

Ruth K. Bork, M.Ed., *Director*

Often, the degree of physical accessibility and types of available support services play an important part in a disabled student's selection of a college. An examination of Northeastern University's campus map shows the buildings to be located within relatively close proximity to one another. Nearly all buildings have elevators that are open to use by all. A special advantage at Northeastern is the existence of a tunnel system, constructed prior to 1965, that links most buildings; in the harsh New England winters and during inclement weather, this proves to be a welcome feature to all.

Any student who has a disability-related special need—no matter how small or individual—can receive ready support services from the Office of Services for the Handicapped (OSH). Frequently, students are uncertain about how they may be aided by this office, and in these situations a discussion of possible alternatives can be quite helpful. OSH provides a wide range of support services to eliminate the competitive disadvantages that a disability may create. Services are individually tailored to meet the needs of each student.

Students who have a disability are strongly urged to meet with the staff in OSH early in their consideration of Northeastern. Together, they can discuss the types of service that would best meet students' needs, and applicants can see the campus firsthand. If a visit is not possible, the OSH director can be contacted by phone or by mail to avoid the unnecessary delays and confusion that may arise with last-minute adjustments; 5 Ell Building, telephone 617-437-2675 (voice) or 617-437-2730 (TTY).

The following types of assistance are available from the Office of Services for the Handicapped:

Orientation Tailored to the needs of specific disability groups, orientation utilizes tactile maps for vision-impaired students, interpreters for hearing-impaired students, and accessible routes of travel for students with mobility impairments.

Registration and Preregistration Assistance to help ensure class accessibility and course adaptation.

Counseling Personal, academic, and referral services.

Housing Necessary modification in residence halls.

For Students with Visual Impairments OSH assists in securing taped and braille textbooks and materials; readers; campus orientation; tactile maps; and auxiliary aids such as braillers, Visualtek readers, raised-line drawing kits, large-print typewriters, talking-

book machines, magnifiers, talking calculators, variable-speed tape recorders, and the Kurzweil Reading Machine.

For the Deaf/Hearing-Impaired Student OSH offers services including oral and sign language interpreters; note takers; TTY; audiometric testing; hearing-aid evaluation, fitting, and orientation; instruction in sign language and speech reading; and speech therapy. Sign language interpreting and oral interpreting services will be provided to deaf and hearing-impaired students *only after they have been denied such services by their Division of Vocational Rehabilitation, provided the Office of Services for the Handicapped has received information documenting the reason for such denial.*

For Students with Learning Disabilities OSH assists in securing taped textbooks and materials, readers, untimed testing, and course and program modification. Services will be provided only upon receipt of diagnostic testing, documentation, and prescriptive write-ups. Students without this material can be referred to appropriate agencies for testing.

For Students Who Are Wheelchair Users/Mobility-Impaired OSH offers information on appropriate routes of travel, assistance in relocating classes, adaptive physical education, and physical therapy.

General Assistance Services Includes scribes; advocacy liaison with instructors and other University staff; handicapped parking; corrective tutoring in English writing, reading, and language problems; special examination situations.

Information Clearinghouse Offers articles, periodicals, books, and other literature for, about, and by individuals with disabilities.

The Office of Services for the Handicapped is also the gathering place for the Disabled Student Organization of Northeastern University, which works cooperatively with OSH to plan programs and improve accessibility of services for persons with disabilities at Northeastern.

Department of Career Development and Placement

Joseph E. Barbeau, Ed.D., *Dean and Director*

The Department of Career Development and Placement offers career guidance, counseling, and placement assistance to all students, alumni, and employees of the University. Job opportunity files are maintained and contacts are made with potential employers to seek new opportunities. In addition, the department assists undergraduate students and alumni who seek admission to graduate or professional schools; arranges internships for undergraduate and graduate students; and provides information and advice for students who wish to study abroad. The department helps students formulate career plans, prepare for entry into the work force, and find satisfactory employment. This assistance is provided in the form of a variety of workshops and undergraduate elective courses on career development topics. Courses are subject to normal tuition charges, but all other services are provided without charge except for a nominal fee for duplicating and forwarding credential files.

This department houses the Career Resource Center, which contains a collection of up-to-date career literature and other materials including career planning texts and how-to books as well as annual reports, descriptive brochures, catalogs, and information on over 1,200 organizations. There is also a job bank of employment opportunities that is updated daily. Individuals can apply directly for these opportunities. A collection of internship opportunities is also available in the center.

GIS, a computerized Guidance Information System, is on line to help explore graduate and professional schools, sources of financial aid, and occupational options. Staff

are available by appointment for individual career counseling, résumés, and cover-letter critiques. Workshops are also scheduled during activities periods throughout the quarter on résumé preparation, cover-letter writing, interviewing, and the job search.

Public Safety Division

All students are urged to take full advantage of the police, parking, fire safety, security, emergency medical and related public safety services offered by the University's Public Safety Division. While the Public Safety Division provides twenty-four hour services every day of the year, students are reminded that each individual who lives, works, or studies in an urban environment has a responsibility to observe basic personal safety and security practices in order to minimize the potential of being victimized. The Northeastern University Public Safety Division provides assistance to individual students or groups upon request to identify potential security hazards and to help them plan personalized safety programs.

HELP Legal Services

HELP Legal Services Plan offers low-cost legal services to undergraduate students. The annual membership is free. Complete confidentiality is assured. Services are available Monday through Friday, 10:00 a.m. to 5:00 p.m., 264 Ell Center, telephone 617-437-2636.

Alumni Association

More than 109,000 alumni now form the Alumni Association, created to benefit Northeastern and its graduates. The association is governed by an executive committee elected from the alumni community. Membership is automatic upon graduation. Association activities include Homecoming, presentation of the Outstanding Alumni Awards, and the annual presentation of Professional Promise Awards to outstanding seniors in each college. Notice of all association activities is published in the *Northeastern Alumni Magazine* and in other specialized publications.

Alumni officers, in conjunction with the Office of Alumni Relations, have established a series of enrichment/education programs to meet the vocational and avocational needs of Northeastern's graduates. The Alumni Association has also initiated a successful group travel program to provide the alumni of Northeastern with interesting and economical opportunities for foreign travel. It also sponsors group term life insurance.

Regional alumni clubs have been established from coast to coast. All alumni are eligible to become members of these organizations. The clubs meet periodically with varied programs, often in conjunction with professional and athletic events, faculty visits, and service projects. Additionally, alumni class organizations conduct reunions for their respective classes every five years, and Golden Graduates' Day, for senior alumni, has become an annual event.

The association sponsors and assists constituent organizations that focus on common professional and avocational interests and college affiliations. These groups have their own officers and conduct various programs throughout the year.

Regional alumni clubs provide a valuable service to the University by sponsoring admissions conferences for high school students and the parents of students who are interested in attending college. Alumni volunteers across the nation represent the Admissions Office on a continuing basis at high schools and community colleges.

The association is headquartered in the Office of Alumni Relations, 125 Richards Hall, telephone 617-437-3186. Addresses of alumni are maintained in the Office of Alumni Records, telephone 617-437-2791.

Student Activities

Student Activities at Northeastern



The University regards student activities as an integral part of education and provides for a range of activities to spark students' interest and satisfy their inclinations: students may play intramural sports on a wide variety of teams; write for the *Northeastern News*; broadcast over WRBB, the student-operated radio station; act; dance; sing; play music; or become involved with student government.

The University encourages relaxation and socializing: students can meet new friends by joining any of the more than 150 campus clubs and organizations; attend a lecture, a film, or a play; or go skiing or camping in the mountains. Once students begin to take advantage of what is available on campus, there is no telling what they will learn or whom they might meet.

A good portion of a student's between-class time will probably be spent in the Carl S. Ell Student Center. The dominant feature of the main level of this "student building" is the magnificent main lounge. Five stories in height, the lounge comfortably seats eight hundred students—a good place for quiet conversation or contemplation. Below

the lounge are a cafeteria and Club Ell, where free films and live entertainment are provided on a regular basis. In addition, the Student Center has a ballroom, a piano practice room, a large game room with billiards and table tennis equipment, study rooms, a typing room, a computer room, and many meeting and function rooms. The Information Booth staff can help answer any questions and also offers printing and photocopying services. The Student Center is that part of Northeastern University where you can relax and really feel comfortable and at home.

Each Monday and Thursday, the hours between 11:30 a.m. and 1:30 p.m. are reserved for student activities. No classes are held during these times. Student clubs, intramural sports, cultural events, and many other activities are scheduled to provide opportunities to make spontaneous or planned use of your time. All students have the chance to become involved in campus activities, whether they reside in the residence halls or are commuters, without interfering with their academic commitments.

Student Organizations

All-University Organizations

Council for University Programs (CUP)
 Concert Committee
 Lecture Committee
 Publicity Committee
 Special Events Committee
 NU New-Student Orientation Staff
 Student Alumni Association
 Student Court
 Student Government Association (SGA)

Performing Arts Organizations

Band
 Choral Society
 Dance Theatre
 Early Music Players
 Orchestra
 Silver Masque

Departmental and Academic Organizations

Accounting Club
 Art and Architecture Society
 Association for Computing Machinery
 Association of the U.S. Army
 Biomedical Engineering Society
 Black Business Student Association
 Black Engineering Student Society
 Business Student Advisory Committee
 Criminal Justice Advisory Council
 Economics Club
 Forensic Scientists at Northeastern University
 Health, Sport, and Leisure Club
 Human Resource Management Club
 Human Services Student Organization
 Marketing Club
 Math Club
 Medical Laboratory Science Club
 Musicians' Society
 National Honor Society of Scabbard and Blade
 Naval Science Association
 Nurses Pinning Committee
 Nursing Student Organization Council
 Peers Counseling Peers

Philosophy Club
 Physical Therapy Club
 Physical Therapy Yearbook
 Psychology Club
 Public Relations Student Society
 Respiratory Therapy Club
The Script
 Society of Physics Students
 Speech and Hearing Club
 Student Athletic Training Association
 Student Health Records Association

Media

Cauldron
Northeastern News
Onyx
Spectrum
 WRBB-FM

Special Interest Clubs

Amateur Radio Club
 Amnesty International
 Camera Club
 Cheerleaders
 Chess Club
 Disabled Students Organization
 Downhillers Ski and Sports Club
 Entrepreneurs' Club
 Future Black Lawyers' Society
 Husky Key
 Hus-Skiers and Outing Club (NUHOC)
 Investment Club
 Northeastern University Organization for Alternative Lifestyles (NUAL)
 Pershing Rifles
 Sailing Club
 Students Against Nuclear Destruction
 Students for Animal Rights (STAR)
 Students for Environmental Awareness
 Students for Life
 Tactical Society
 Terra Society
 United Nations Association
 Women's Center

Religious Organizations
Campus Crusade for Christ
Chinese Christian Fellowship
Christian Student Association
Hillel
Islamic Society
Seekers Christian Fellowship
Word Explosion Christian Fellowship

Ethnic and Cultural Clubs
Arab Heritage Cultural Club
Armenian Club

Cape Verdean Students Organization
Caribbean Student Organization
Chinese Student Club
Haitian Student Unity
Hellenic Association
International Students' Forum
Korean Student Association
Lebanese Student Association
Northeastern Black Student Association
Puerto Rican Student Organization
Vietnamese Students' Club

Fraternities and Sororities

The recognized sororities and fraternities play an important role in the co-curricular life of the University. Although few fraternities and no sororities have a separate house, they can all be reached through the Office of Student Activities, 255 Ell Center.

Fraternities
Alpha Epsilon Pi
Alpha Kappa Sigma
Beta Gamma Epsilon
Iota Phi Theta
Kappa Alpha Psi
Nu Epsilon Zeta
Phi Beta Sigma
Phi Gamma Pi
Phi Kappa Tau
Phi Sigma Kappa (colony)

Tau Epsilon Phi (colony)
Tau Kappa Epsilon
Zeta Beta Tau (colony)

Sororities
Alpha Kappa Alpha
Delta Phi Epsilon
Delta Sigma Theta
Delta Zeta
Sigma Delta Tau (colony)
Sigma Gamma Rho

Intramural and Recreational Sports

A comprehensive program of intramural and club sports is available throughout the year. Students may choose to participate in a variety of leisure-time activities through the Intramural, Drop-In Recreation, and Club Sports programs. Structured team sports and dual-sport activities are offered year round, with mandatory organizational meetings held at the beginning of each quarter. Students are encouraged to make the Intramural and Club Sports Program a part of their Northeastern experience.

Intramural Program The following intramural activities are offered:

<i>Aerobics (recreational)</i>	fall	winter	spring	summer
<i>Basketball</i>	fall	winter	spring	summer
<i>Broomball</i>	fall	winter	—	—
<i>Flag football</i>	fall	—	—	—
<i>Floor hockey</i>	—	—	spring	summer
<i>Ice hockey</i>	fall	winter	—	—
<i>Inner-tube water polo</i>	fall	winter	spring	summer
<i>Racquetball</i>	fall	winter	spring	summer
<i>Soccer</i>	fall	winter	spring	summer
<i>Softball</i>	fall	—	spring	summer
<i>Volleyball</i>	fall	winter	spring	summer
<i>Wallyball</i>	fall	winter	spring	summer

Drop-In Recreation Program The Drop-In Recreation Program is an integral aspect of Northeastern's recreational opportunities. It is designed to offer informal activities when facilities are not being used for physical education classes and athletic practices and contests. Recreational facilities include:

Basketball courts
Volleyball courts
Racquetball courts
Fitness room
Free weight room
Ice-skating rink

Indoor track and cage
Martial arts/wrestling room
Nautilus weight room
Stretching room
Swimming pool

Club Sports Program The Club Sports Program offers both intercollegiate competition and instruction and includes:

Archery
Badminton
Fencing
Figure skating
Judo
Lacrosse
Racquetball

Rugby
Shotokan karate
Soccer
Tae Kwon Do karate
Volleyball
Wrestling

Men's Athletics

Whether it be on the SuperTurf at Parsons Field in the fall, the ice or hardwood of the Matthews Arena in the winter, or the waters of the picturesque Charles River in the spring, a Northeastern athletic team is a familiar sight, either training or competing, nearly twelve months of the year in the Greater Boston area.

Husky varsity entries have touched down on some prestigious athletic real estate, such as Henley-on-Thames, England; Madison Square Garden, New York; and Fenway Park, which is part of Northeastern's Back Bay neighborhood. In fact, one could include the Los Angeles Olympic Village in the summer of 1980 and the most recent summer Olympiad in Korea, when an alumnus oarsman stroked his way to a bronze medal for the United States.

All students are urged to participate in the University's athletic program, which recently added soccer to its list of varsity sports. The University fields teams in baseball, crew, swimming, soccer, cross-country, track and field, football, hockey, basketball, and golf.

Facilities include the spacious Cabot Physical Education Center, Edward S. Parsons Field, the Matthews Arena, and the recently completed Bernard and Jolane Solomon outdoor track and field facility in Dedham. The Cabot Gymnasium contains four basketball courts, three weight rooms (Nautilus, free weights, and Universal), a wrestling and martial arts room, a cage for indoor track and soccer, and four modern racquetball courts.

Parsons Field, home of the Huskies football team, with its new SuperTurf surface, also features Northeastern's Friedman baseball diamond. The Solomon track has an eight-lane, Action Trak 200 running surface and an expansive area for concurrent jumping and field events. The new outdoor facility is ready to host dual and championship meet competition and is a permanent site for Northeastern track athletes.

The hockey and basketball teams play their home games in the historic "Boston Arena"—now the Matthews Arena. The arena is located near the main quadrangle of the campus. It provides a portable floor for the Husky basketball team and daily free public skating.

Matthews Arena is the oldest ice hockey rink in the world; it features a seating

capacity of six thousand and some of the finest sight lines of any rink in the country. Within the past five years, both the men's basketball and hockey teams surged to NCAA Championship play under the roof of the Matthews Arena.

Northeastern annually fields one of the most competitive Division I-AA football teams in New England and, as an independent, has always played a demanding schedule. A partial list of the Huskies' most recent opponents includes New Hampshire, Massachusetts, Lehigh, Richmond, Connecticut, Holy Cross, and Harvard. Three current National Football League players earned varsity letters and undergraduate degrees from Northeastern.

The University's hockey team skates in the new Hockey East Association, the eastern college hockey alignment that includes three Boston-based teams and a total of eight teams from New England. Along with city rivals Boston College, Boston University, and Harvard, the Huskies spend the first two Monday nights in February playing in the prestigious Beanpot Hockey Tournament before a packed Boston Garden house. In 1985, the Huskies became the first team to win back-to-back Beanpots since 1979, and, three years later, the men captured the Beanpot and Hockey East championships.

Northeastern's basketball Huskies wage their roundball wars in the tough ECAC North Atlantic Conference of the NCAA. They play the local powers, such as Boston College and Boston University, and recent tournament appearances have included games with national powers such as Illinois, Ohio State, Maryland, and Louisville. Even against the cream of the East, Northeastern has had twenty-three winning seasons in the last twenty-six years and has participated in five of the last seven NCAA championships.

To discuss track and cross-country in New England is to talk about Northeastern track and cross-country. The Huskies, who defended their Greater Boston Championship both indoors and outdoors last year, have been the flagship program on the New England track and field scene for the last decade and a half; in that stretch, the Huskies have captured ten New England indoor titles and as many outdoor championships. Each year, Northeastern is represented by alumni running for national and international honors as members of top track and field clubs. Several Northeastern track athletes have competed in Olympic Trials and Games over the past two decades. Last fall, the University cross-country team earned a berth in the NCAA Championships and was represented by an All-America selection.

Based at Friedman Diamond at Parsons Field, the Husky baseball team won more than twenty games en route to ECAC championship play in 1986.

The most amazing Husky sports story, however, is that of varsity crew. In 1965, its first season, the NU crew won four of five regattas and the small-college rowing championships, and it became the first NU team to compete internationally when it rowed in the Henley Royal Regatta. The next year, the Huskies moved into the major college rowing league. They culminated their swift rise by winning the Eastern Sprints in 1972 and 1973 and rowed in the finals of the Grand Challenge Cup of the Henley Royal Regatta. In 1973, they were considered the finest eight in the country. In 1978, the freshman crew won the Eastern Sprints and was invited to row the Thames Challenge Cup race at Henley. Last spring, the Northeastern crew returned to Henley and the Challenge Cup as champions of the coveted I.R.A. Regatta in Syracuse.

Northeastern has buttressed its physical fitness facilities campus wide to accommodate a daily influx of undergraduates, graduates, staff, and faculty at Cabot Gymnasium and the Matthews Arena. One of the most popular sport centers is the Barletta Natatorium, home of the Husky swim team. This fine aquatics facility is equipped to handle varsity swim competitions, handicapped swim programs, recreational swims, and water polo. In 1988, the men's varsity swimmers captured the ECAC Championships.

Women's Athletics

From a very small program with very few resources, the Northeastern University women's intercollegiate athletic program has grown rapidly, reflecting recent tremendous growth in women's athletics at all levels. The program now encompasses ten sports: basketball, crew, cross-country, field hockey, gymnastics, ice hockey, swimming and diving, track and field (indoor and outdoor), and volleyball.

As a member of the NCAA, Northeastern University subscribes to all policies and regulations of the association. Athletic scholarships are available to women student athletes in all programs.

Northeastern's goal is to provide an excellent program of athletics for all women students who qualify. Our programs are in the mainstream of the exciting growth in women's athletics throughout the country.

In the past year, our field hockey team, using the SuperTurf at Edward S. Parsons Field in Brookline as their home field, maintained their position in the nation's top ten, finishing third in the nation in Division I in 1988. The gymnastics team took a significant step forward, finishing fourth in the NCAA Regional Championship.

Our ice hockey team, which makes its home in the beautifully renovated Matthews Arena, became the top team in the country by winning the ECAC Championship, as well as finishing the season undefeated.

Moving toward excellence in all programs, Women's Athletics looks forward to an exciting year. Specific policies and guidelines relating to academic eligibility for athletic participation will be distributed in writing to all student athletes.

Center for the Study of Sport in Society

The Center for the Study of Sport in Society, the first of its kind in the nation, was established to address the abuses of athletes' education and rights. The center has already established a university degree completion program for current or former professional athletes and has formal agreements with the United States Olympic Committee; the players' associations in the NBA, NFL, and NHL; and the Major Indoor Soccer League. The center is the hub of a national consortium of universities for the University Degree Completion Program. There are currently thirty-seven members of the consortium, with a possible forty members for 1989–90. To date, 175,000 students, parents, teachers, and coaches have been reached by the nearly one hundred pro athletes who have participated in the center's Community and School Outreach Program. The center and its consortium sponsor National Student–Athlete Day, with events in more than forty states. The center has also established a North American Faculty Affiliates network of 150 of the nation's top sports scholars who address and research the various academic areas of sport studies. The center sponsors seminars; it sponsors a broad-based curriculum in sport and social issues; it gives annual awards for excellence in sports journalism, in both print and electronic media; and it promotes campus-wide lectures, forums, and news conferences. Three journals are also published through the center: the *Journal of Sport and Social Issues*, the *ARENA Review*, and the bimonthly *CSSS Digest*.

The director of the program is Dr. Richard Lapchick, author, scholar, and civil rights activist. Dr. Wilbert McLure, Olympic gold medal boxing champion and prominent psychologist, is an associate director. Keith Lee, a six-year veteran of the NFL, is also an associate director and public school outreach coordinator. Anita DeFrantz, Olympic medalist and a member of the International Olympic Committee, is the western coordinator.

Religious Life

Northeastern University has concern for the religious and moral development of students of all faiths. A Religious Advisory Board, consisting of administrators and faculty as well as full-time chaplains, seeks to articulate the needs in this area and facilitate the work of various religious groups on campus. A Chaplains' Association, consisting of full-time chaplains and their full-time assistants, works cooperatively to emphasize the interfaith dimensions of campus life.

The chaplains also deal with students on a denominational basis at various centers near the campus: Episcopal College Work Center at 40 Prescott Street in Brookline; Hillel House at 456 Parker Street for Jewish students; Lutheran Center, 84 The Fenway #14; and St. Ann Roman Catholic Parish and Student Center at 68 St. Stephen Street. In addition, there are numerous religious student organizations on campus listed under "Student Organizations."

Interfaith services to celebrate special days and events are held in the Bacon Memorial Chapel, located at 211 Ell Building. The chapel is also used for denominational worship services and special lectures on religion. It is open daily for prayer and meditation and is a setting for weddings of students and alumni.

The Religious Life Office is located at 207 Ell Building, telephone 617-437-2728. Office hours are from 8:30 a.m. to 4:30 p.m., Monday through Friday.

Appendix

Governing Boards and Officers of Northeastern

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* Faculty Senate representative

Scholarships

University Scholarships

The following scholarships are awarded through the Office of Financial Aid. See the Financial Aid section, page 40, for more information.

Leonard S. Adelman Memorial Scholarship *College of Criminal Justice* This scholarship was established in 1986 through the generosity of the family, friends, and professional colleagues of Mr. Adelman, a 1978 dean's list graduate of the College of Criminal Justice. It is a living memorial to a man of character, courage, and selflessness and to an honored athlete. He was a dedicated police officer, cited more than thirty times for heroism, and in 1980, at age twenty-five, sacrificed his life in the line of duty. The earnings from the fund are awarded annually to a fourth-year student at his college who, in the opinion of its faculty, best exemplifies Leonard's dedication to scholarship, a sound character, and a highly motivated career in law enforcement. Financial need is not a requirement. A plaque or trophy in honor of Mr. Adelman is also presented to the outstanding senior in the College of Criminal Justice interested in a municipal policing career. Both names are inscribed on a memorial master plaque at the University.

The George I. Alden Scholarship Fund *All Colleges* George I. Alden (1843–1926) was a Worcester educator, scientist, and entrepreneur and a founder of the Norton Company. This fund was created by a 1987 challenge grant from the George I. Alden Trust and matching gifts from more than six hundred donors. Leadership donors included: Alden Electronics, Inc.; Vance G. Blake; Robert S. Bleakney; Harry Doehla Foundation; Lawrence H. Fisher, Esq.; GenRad Foundation; Louis L. Guerriere; David D. Haig, Jr.; Louis C. Iandoli; Robert L. Johnson; Mr. and Mrs. Darald R. Libby; New England Telephone Company; Norton Company; Alan P. Pandiani; Edward M. Perdue; Robert J. Perry; John W. Rabe; George P. Sakellaris; Vahan L. Sarkisian; Shawmut Worcester County Bank, N.A.; and Jacob Zager.

The income from the George I. Alden Scholarship Fund is awarded annually to qualified upperclass students participating in the University Honors Program who are residents of Worcester County.

Vivian B. Allen Scholarships *College of Nursing* The Vivian B. Allen Foundation Endowment for nursing scholarships was established in 1968 through the generosity of the Vivian B. Allen Foundation, Inc. The income from a \$500,000 endowment fund is used to provide scholarship assistance for students entering or enrolled in the College of Nursing of Northeastern University. The application procedures and qualifications for selection are the same as those for all other scholarships.

Alumni Scholarships *All Colleges* Scholarship aid is available to entering students who are relatives of alumni. Applications must show evidence of scholastic achievement and financial need.

American Optical Foundation Scholarship *All Colleges* This annual scholarship was established in 1986 through the generosity of the American Optical Company to benefit entering freshmen from communities in southern Worcester County. Awards are made to students who demonstrate ability, soundness of character, and financial need.

Chet April Scholarship Fund *College of Arts and Sciences—Marine Studies* This fund was established in 1971 in memory of Chet April with an endowment provided by his friends and associates in the Lynn Volunteer Tuna Club. The income from the fund is awarded annually to one or more upperclass students enrolled in the marine studies program. Awards are given on the basis of demonstrable financial need and above-average scholastic achievement. Preference may be given to deserving students from the North Shore area.

Irving Aronson Scholarship *College of Engineering—Electrical Engineering* The Irving Aronson Scholarship for Electrical Engineering students was established through the generosity of the family of Irving Aronson as a living memorial to a man who shared his life with many people and who cared so much for the educational process. Income from this fund is awarded or

loaned to electrical engineering students who demonstrate financial need and academic responsibility.

Alice S. Ayling Scholarship *College of Arts and Sciences* Several scholarships are awarded annually to students in the College of Arts and Sciences who demonstrate a strong academic record, financial need, good citizenship, and leadership through involvement with extracurricular and community activities. Under normal circumstances, these scholarships continue through the senior year.

Bank of New England Scholarship Fund *All Colleges* This fund was established in 1989 by a generous grant from the Bank toward Phase II of The Century Fund campaign. The award recognizes the extensive and long-term relationships between the Bank and the University, as well as the role played by Northeastern in the quality of life of Boston's citizens. Income from the fund provides financial aid to Northeastern students who are graduates of the Boston Public Schools. Preference is given to minority students who have participated in the academic enrichment program conducted by the Balfour Academy at Northeastern and/or attended West Roxbury High School. Recipients must demonstrate financial need and academic stability.

George L. Barnes Scholarship *All Colleges* This fund was established in 1969 by Miriam P. Poole, daughter of George L. Barnes, in memory of her father, a distinguished member of the Northeastern University Corporation and Board of Trustees from 1937 until his death in 1965. The income from this fund will annually provide a scholarship to a deserving student from Weymouth, Massachusetts. The award is made on the basis of need and character. Some additional assistance may be given in the upperclass years.

Barry Scholarship *College of Engineering* The Barry Scholarship, established in 1973 by the Barry Division of Barry Wright Corporation, is available to students in the College of Engineering. Preference is given to mechanical engineering majors and sons and daughters of Barry employees on the basis of demonstrable financial need and academic achievement.

Mr. and Mrs. Emil Matthew Bauer Fund *All Colleges* The interest from the fund, established in 1954, is used for scholarships or other financial assistance to students of German birth or of German extraction studying at Northeastern University. The scholarships are available to either men or women students enrolled in any year at the University.

Douglas F. Baxter Scholarship Fund *Mechanical Engineering* The Douglas F. Baxter Scholarship Fund was established in 1979 by Dr. Roy E. Baxter and family to honor a man who loved his country and gave his life in service for it during the Second World War. He had graduated from Northeastern University in 1942.

The income from this fund is to be awarded annually to a student at Northeastern University majoring in Mechanical Engineering. This award is based on scholastic achievement and is open to all students, regardless of financial need.

Lena M. and Elbridge A. Bollong Memorial Scholarship Fund *College of Business Administration* This scholarship was established in 1987 in memory of Lena M. and Elbridge A. Bollong. Elbridge A. Bollong was a 1917 graduate of the School of Commerce and Finance. The income from this fund is awarded annually to undergraduate students in the College of Business Administration who demonstrate financial need, academic stability, and soundness of character.

Alvah K. Borman Memorial Scholarship *Gamma Phi Kappa Fraternity Undergraduates* This scholarship was established in 1976 through the generous contributions of Gamma Phi Kappa Fraternity alumni. In 1979, the Gamma Phi Kappa Fraternity Alumni Association, Incorporated, voted to name the scholarship in memory of Alvah K. Borman, Northeastern University's Dean of Graduate Placement. Dean Borman was an active member of the GPK fraternity for over forty-six years, serving as an undergraduate brother (class of 1936) and faculty adviser from 1953 to 1965, an active alumnus until his untimely death in 1979.

Awards from this fund are made annually to undergraduate members of the Gamma Phi Kappa Fraternity who have demonstrated good academic standing. Recipients of this award must have been members in good standing of the Gamma Phi Kappa Fraternity for at least six months prior to the time of award.

Boston-Bouvé Class of 1935 Scholarship *Boston-Bouvé College of Human Development Professions* This fund was established in 1985 by the graduates of Boston-Bouvé College, Class of 1935. The income from the fund is awarded annually to a sophomore or junior majoring in health education, physical education, or physical therapy in Boston-Bouvé College of Human Development Professions. The recipient must be a responsible student of sound character with demonstrated leadership ability and a minimum quality-point average of 3.0.

Boston Housing Authority Scholarships *All Colleges* As an expression of Northeastern's commitment to the city of Boston, the University has established one hundred full-time undergraduate scholarships for residents of housing developments run by the Boston Housing Authority (BHA). Applicants for the scholarships, which were offered for the first time in September 1984, must meet the requirements for admission to Northeastern and be residents of BHA housing.

Martin Brown Scholarship Fund *College of Engineering* This scholarship was established in 1961 by Mr. Martin Brown, an engineering alumnus of the Class of 1921. Its purpose is to assist qualified students enrolled in the College of Engineering who have need and have demonstrated above-average scholastic ability.

Richard D. Bruhmuller Accounting Scholarship *College of Business Administration—Accounting* This annual scholarship was established in 1985 through the generosity of Richard D. Bruhmuller and his wife, Elizabeth. Mr. Bruhmuller, an accounting graduate and partner in the public accounting firm of Tobin & Waldstein, established the fund to benefit students of ability and need who have chosen to pursue a career in public accounting. The income from the fund is awarded each year to an upperclass accounting student who displays ability, soundness of character, and financial need.

Wellington Burnham Fund *All Colleges* This fund provides financial assistance to worthy students of limited means without discrimination as to race, creed, color, or scholastic attainment. It was established in 1961 under the provisions of the will of George A. Burnham.

Godfrey L. Cabot Scholarship Fund *All Colleges* This fund was established by Dr. Cabot in 1954 to help meet the college expenses of employees or children of employees of Godfrey L. Cabot, Inc., and its subsidiary and associated companies. To be eligible, the employee must have completed at least five years of service with the company prior to the time the student enters the University. The University shall determine the number and amount of these scholarships, which are not limited to outstanding students and which are available to evening as well as day students. Students interested in applying for scholarship aid from this fund should communicate with the Cabot Personnel Office or the Office of Financial Aid at Northeastern University.

Cameron and Colby Ellis H. Carson Scholarship Fund *College of Business Administration* This fund was established in 1983 by Cameron and Colby Company, Inc., in honor of Mr. Carson, former president of its Treaty Reinsurance Activity, known as NERCO. The income from this fund is used to assist a freshman in the College of Business Administration who demonstrates not only financial need but also academic promise deemed consistent with the high standards of foresight and acumen that characterized the career of Ellis H. Carson.

Camp Dresser & McKee, Inc., Scholarship *All Colleges* This scholarship was established in 1973 by Camp Dresser & McKee, Inc., and is available to students in all colleges. Preference for awards is based upon demonstrable financial need and academic achievement.

Louis S. Cashman Memorial Scholarship Fund *College of Business Administration* This fund was established by the Massachusetts Credit Union Association (CUNA) and friends of Mr. Cashman in recognition of his outstanding service to the credit union movement in the Commonwealth of Massachusetts.

This scholarship is awarded annually to students in the College of Business Administration who have need, with particular preference given to those enrolled in banking and finance.

Gardner A. Caverly Scholarship *All Colleges* This scholarship was established in 1957 through the generosity of Mr. Gardner A. Caverly, an alumnus of the College of Business Administration and a member of the Class of 1934. Its purpose is to provide financial assistance and encourage qualified students from the New England area to attend Northeastern University. In selecting worthy students for these scholarship awards, preference is given to graduates of the Rutland, Vermont, and Laconia, New Hampshire, high schools.

Carl W. Christiansen Scholarship *College of Business Administration* The Carl W. Christiansen Scholarship Fund was established in 1976 by Mr. Carl W. Christiansen, a graduate of the School of Commerce and Finance, Providence Division of Northeastern University, Class of 1923. Early in his career, Mr. Christiansen was an accounting instructor and associate dean in the Providence Division. In 1927, the accounting firm of Christiansen, Murphy and Company was founded, which in 1940 became known as Christiansen and Company—Certified Public Accountants. The income from this fund is awarded annually to an entering freshman in the day College of Business Administration who has demonstrated the necessity for financial aid.

Preference will be given to students from the state of Rhode Island who are interested in pursuing a career in accounting.

Chryssis/Pappas Memorial Scholarship Fund *College of Engineering—Electrical and Computer Engineering* This scholarship fund was established jointly in 1989 by engineering graduates George C. Chryssis, E'72, ME'77, and Arthur A. Pappas, E'60, in memory of their fathers, Mr. Christopher G. Chryssis and Mr. Alexander A. Pappas. The donors wish the grants from the scholarship fund to provide annual scholarship awards, with preference given to students of Greek descent who demonstrate scholastic achievement and financial need. International students who meet these criteria will be considered.

The donors, both of Greek descent, attended Northeastern after becoming residents of the United States. They later distinguished themselves as engineers and businessmen, founding several successful high-technology companies in Massachusetts. The Chryssis/Pappas Memorial Scholarship Fund expresses the donors' appreciation of their families, their heritage, and the opportunity a Northeastern education holds for those who follow them.

Class of 1967 Alumni Scholarship *Day College* The Northeastern University Class of 1967 Alumni Scholarship was established in 1967 and endowed in 1982 by the Class of 1967. Income from the fund is awarded each year on the basis of financial need, campus activities, and scholastic achievement. Priority will be given to children, other relatives, and friends of the Class of 1967.

Richard S. Cole Scholarship Fund *College of Engineering—Chemical Engineering* The Richard S. Cole Scholarship Fund in Chemical Engineering was established in December 1987 by Richard S. Cole, E'44, an active and loyal alumnus. The income from the fund is awarded annually to a student majoring in chemical engineering who has demonstrated both academic achievement and financial need.

Ruby H. Cole Scholarship Fund *All Colleges* The Ruby H. Cole Scholarship Fund was established in 1973 under the will of Mrs. Cole, of Boston, Massachusetts. The income from the fund is awarded annually to one or more female students enrolled in or admitted to undergraduate programs of the Basic Colleges of the University and who are graduates of Roxbury High School, Roxbury, Massachusetts. Recipients must demonstrate financial need, academic stability, and soundness of character.

Commercial Union Insurance Companies Scholarship *College of Criminal Justice* The income from this fund, established in 1982 by the Commercial Union Insurance Companies, is used to provide a scholarship to an entering first-year student who demonstrates need and shows promise of success in the law enforcement field.

Community Scholarships *All Colleges* The Community Scholarships were established by President Asa S. Knowles during the period 1963–73. These scholarships stipulate that Northeastern will ensure that full freshman-year tuition be met in the form of scholarships and grants for qualified students.

In order to qualify for consideration, a student must apply for financial assistance through the normal application procedure and demonstrate need.

The following Massachusetts communities are designated under this scholarship: Boston, Ashland, Burlington, Brookline, Belmont, Brockton, Chelmsford, Framingham, Marshfield, Milford, Norwood, Reading, Revere, Westwood, Weston, and Weymouth.

Compugraphic Corporation Scholarship Fund *All Colleges* The Compugraphic Corporation Scholarship Fund has been established and endowed at the University with a generous gift from an individual. The income from the scholarship fund is used annually as financial assistance for persons who are admitted to or enrolled in full-time undergraduate programs of the Basic Colleges of the University and who demonstrate financial need, academic stability, and soundness of character. Scholarships are tuition grants and are awarded to persons who are otherwise eligible and who are, at the time of the grant, children of current employees of Compugraphic Corporation.

Arnold L. Cormier Memorial Scholarship *College of Criminal Justice* The Arnold L. Cormier Memorial Scholarship Fund was established in 1980 by Joseph L. and Ruth E. Cormier in memory of their son, Arnold, a student in the College of Criminal Justice, Class of 1981. Arnold was a good student with excellent grades and was an active participant in classroom discussions and college activities.

His untimely death in an automobile accident while on a weekend trip with two of his classmates was a tragic loss to his parents and friends. To perpetuate the memory of Arnold Cor-

mier and the spirit of good fellowship for which he stood, this scholarship is awarded annually to a senior in the College of Criminal Justice.

George C. and Penio G. Culolias Scholarship Fund *All Colleges* This fund was established in 1986 through the generosity of Mrs. Penio G. Culolias, a friend of Northeastern University, with a strong belief in the value of cooperative education. This scholarship is awarded annually to an upperclass student on the bases of financial need and academic promise.

Salvatore J. and Corinne Danca Scholarship *All Colleges* The Salvatore J. and Corinne Danca Scholarship, established in 1974 by Salvatore J. Danca, a graduate of Northeastern University, Class of 1934, is awarded annually to a student enrolled as a sophomore. Selection is made by the Committee on Scholarships, using academic excellence and financial need as the criteria for selection.

Elizabeth A. Davey Scholarship for Physical Therapy *Boston-Bouvé College of Human Development Professions* The Elizabeth A. Davey Scholarship for Physical Therapy students was established through the generosity of the family and friends at Choate Memorial Hospital on behalf of Elizabeth A. Davey, as a living memorial to a woman who shared her life with so many people. Income from this fund is awarded or loaned to a physical therapy senior who demonstrates superior academic achievement and financial need.

C. Denson Day Scholarship Fund *College of Engineering—Mechanical Engineering* This scholarship was established in 1988 by C. Denson Day, a College of Engineering alumnus from the Class of 1926, and his wife Barbara, in fond memory of two of his professors, Emil Gramstorff and Alfred Ferretti. Income from the fund is awarded to mechanical engineering students who demonstrate financial need and academic responsibility.

Charles M. Devlin Scholarship *All Colleges* This fund was established in 1976 by the members of the Class of 1970 "in honor of our dedicated adviser," Charles M. Devlin. The income from the fund is awarded annually to upperclass students with proven ability and demonstrable financial need. Preference is given to children of members of the Class of 1970.

Diamond Anniversary Development Program Scholarship *All Colleges* This scholarship was established to commemorate the successful conclusion of the Diamond Anniversary Development Program. This scholarship recognizes the loyalty and generosity of the thousands of alumni and friends, corporations, foundations, and organizations whose significant contributions of time and resources have brought Northeastern University to "that greatness which is its destiny."

Three \$1,000 scholarships are awarded annually, as follows: to one or more full-time students enrolled in a cooperative education program within a Basic College of the University, to one or more part-time students enrolled in a Basic College of the University, and to one or more full-time students enrolled in the graduate division or a professional school of the University. Consideration is based upon financial need, academic stability, and soundness of character.

William O. DiPietro Scholarship *College of Engineering* This scholarship was established in 1967 through the generosity of Mr. William O. DiPietro, a distinguished alumnus of the College of Engineering and a member of the Class of 1942. The scholarship is awarded to one or more deserving freshmen who demonstrate a high caliber of achievement and a desire to fulfill the limits of their ability in both academic and cooperative periods of study. In considering recipients for this scholarship, preference is given to freshmen enrolled in the College of Engineering who have a desire to major in chemical engineering. It is intended that those students receiving awards from this scholarship might someday contribute to this or other scholarships themselves, thereby perpetuating growing funds that will help other deserving individuals.

Harry Doehla Memorial Scholarship *All Colleges* The Harry Doehla Memorial Scholarship was established in 1974 in memory of Mr. Harry Doehla, founder and president of Doehla Greeting Cards, Inc. During his lifetime, Mr. Doehla provided much financial assistance to young people of limited means to help them in furthering their educational goals.

The awards from this fund are available to undergraduate day students, with preference being given to graduates of Fitchburg High School, Fitchburg, Massachusetts, and Nashua High School, Nashua, New Hampshire. Additional consideration will be given to children of employees of Doehla Greeting Cards, Inc.

Cpl. James B. Downey USMC Scholarship Fund *All Colleges* This scholarship was established in 1970 through the generosity of Mr. William J. Downey, a graduate of the College of Liberal Arts, Class of 1952, in memory of his brother, Cpl. James B. Downey, USMC. The scholarship is to be

awarded annually to an upperclass student in the day colleges who has demonstrated the necessity for financial aid.

Agnes F. Driscoll Scholarship Fund *All Colleges* This fund will provide scholarship assistance to students in their upperclass years who have demonstrated financial need and scholastic attainment.

John Elfers Memorial Scholarship *All Colleges* This scholarship was established in 1983 by William and Ann Rice Elfers in memory of Mr. Elfers's brother. The income from the fund is awarded annually to undergraduate students who demonstrate financial need, academic promise, and soundness of character.

Carl Stephens Ell Alumni Scholarships *All Colleges* To honor Dr. Carl Stephens Ell, the second president of Northeastern University, the Alumni Association established these scholarships in 1958. Either first-year or upperclass students enrolled at the University are eligible. Awards will be made to worthy students on the basis of scholastic ability and need. The scholarships are to be distributed as equitably as possible among students in the Basic Colleges and University College. Preference shall be given to sons and daughters of Northeastern alumni.

Elmer H. and Daisy M. Everett Memorial Scholarship *All Colleges* This scholarship was established through a bequest of Elmer H. and Daisy M. Everett, both alumni of Northeastern University. Mr. Everett graduated from the College of Engineering, and Mrs. Everett graduated from the School of Business. They were both members of the Class of 1934. Mr. and Mrs. Everett had a strong commitment to help young people wanting to further their education. The fund is administered by the Office of Financial Aid.

Frank L. and Mary C. Farwell Scholarship *All Colleges* This scholarship was established in 1987 by Frank L. Farwell and his wife, Mary C. Farwell. A member of the Northeastern Corporation since 1956 and a trustee of the University since 1958, Mr. Farwell is retired as chairman of the board of Liberty Mutual Insurance Companies and received an honorary degree from Northeastern in 1985. The income from the fund is awarded annually to freshmen who demonstrate financial need.

Michael T. Federico Memorial Fund *All Colleges* The Michael T. Federico Memorial Fund was established in 1982 by the Rhode Island Alumni Club, fellow alumni, and friends of Michael T. Federico, a graduate of the Class of 1940 and a lifelong resident of the state of Rhode Island. Income from the fund is to be awarded annually to one or more students from Rhode Island who are in their sophomore year, have attained a quality-point average of 3.0 or better, and have demonstrated financial need.

George Raymond Fennell Memorial Scholarships *College of Business Administration* Two full-tuition scholarships are awarded each year to freshmen enrolled in the College of Business Administration. The scholarships are awarded in memory of George Raymond Fennell, formerly assistant director of admissions and director of the Northeastern Student Union.

Neal F. and Mary T. Finnegan Scholarship *All Colleges* This fund was established in 1987 by Neal F. Finnegan, a graduate of Northeastern University, and his brother Richard B. Finnegan, a graduate of Stonehill College, to commemorate the fiftieth wedding anniversary of their parents, Neal and Mary Finnegan. It is the sons' desire that recipients of this scholarship be students from the Roxbury and Dorchester areas of Boston where they grew up. Preference will be given to freshmen enrolled in the Basic Colleges who demonstrate financial need, academic stability, and soundness of character.

Clara and Joseph F. Ford Scholarship Fund *All Colleges* A fund established by Clara and Joseph F. Ford to provide tuition scholarships for worthy, needy, and well-qualified students who have demonstrated a democratic and tolerant spirit and who are well disposed toward people of all creeds and races.

Foster Grant Scholarship *All Colleges* This scholarship, established in 1974 by the Foster Grant Co., Inc., of Leominster, Massachusetts, is available to students in any of the full-time undergraduate colleges. Preference is given to children of employees of Foster Grant Co., Inc. Bases for the award are demonstrable financial need and above-average academic achievement.

Chester R. Frost Scholarship Fund *College of Business Administration* This scholarship was established in 1984 through the generosity of Chester R. Frost, a distinguished alumnus of the College of Business Administration and a loyal member of the Class of 1962. Income from this fund is awarded annually as a scholarship to a business student who displays soundness of character, a stable academic record, and financial need. Preference is given to students majoring in accounting.

James R. Fuller Memorial Scholarship Fund *College of Business Administration* This fund was established in 1989 by the family, friends, and business associates of James R. Fuller, a distinguished 1966 graduate of the College of Business Administration. Mr. Fuller was one of two hundred fifty-nine passengers on Pan Am flight 103, which exploded and crashed in Scotland on December 21, 1988. A highly successful automobile industry executive and a director of The National Council at Northeastern, Mr. Fuller was vice president in charge of Volkswagen United States, Inc., at the time of his death.

Income from the fund is awarded annually to an undergraduate student with a concentration in marketing who demonstrates academic stability, financial need, and soundness of character.

Herbert W. and Geraldine E. Gallagher Athletic Scholarship Fund *All Colleges* This scholarship was established by Wendy L. Gallagher, a Northeastern University graduate in the Class of 1975, as a tribute and expression of her love for her parents on their golden wedding anniversary.

Herbert W. Gallagher, Class of 1935, was an outstanding athlete as an undergraduate and was elected to the Northeastern University Athletic Hall of Fame in 1975. He served the University with dedication for over forty years as a successful coach in hockey and baseball and as its athletic director.

This scholarship is awarded annually to a deserving male hockey player who demonstrates financial need, academic ability, and the soundness of character that best exemplifies the Northeastern University athlete.

Gamma Phi Kappa Fraternity Scholarship *All Colleges* The Gamma Phi Kappa Fraternity Scholarship was established in 1972 by the Gamma Phi Kappa Fraternity Alumni Association, Incorporated, and was endowed in 1976 through the generous contributions of Gamma Phi Kappa Fraternity alumni and undergraduates. Awards are made annually from interest on the endowment to undergraduate students enrolled in the basic day colleges of Northeastern University who demonstrate good academic standing and financial need. Undergraduate members of the Gamma Phi Kappa Fraternity are ineligible to apply for this award.

Nathan Gerber Memorial Scholarship *All Colleges* The Nathan Gerber Memorial Scholarship was established in 1974 by Albert Gerber, E'52, and Robert Gerber, E'60, in memory of their father, Nathan, a member of the Class of 1925. The scholarship is awarded annually to a student or students enrolled in the freshman class with a demonstrable financial need. Selection is made by the Committee on Scholarships.

John and Ethel Goldberg Scholarship Fund *All Colleges* This fund was established in 1984 through a bequest by Ethel Goldberg. The income from this fund is used by the University for the tuition of those students the University deems deserving upon the basis of demonstrable financial need and academic achievement. These awards are available to undergraduate day college students.

Robert L. Goldberg Scholarship *College of Engineering—Chemical Engineering* This scholarship was established in 1988 through the generosity of Robert L. Goldberg, a chemical engineering graduate and a member of the Class of 1959. Income from this fund is awarded annually to those upperclass students majoring in chemical engineering who display soundness of character, a stable academic record, and financial need.

M. William Grant Scholarship *College of Engineering—Mechanical Engineering* This scholarship was established in 1988 by the Ingersoll-Rand Company in honor of M. William Grant, E'47, on the occasion of his retirement. Mr. Grant is an active and concerned alumnus and serves as a director of The National Council of Northeastern University. In his position as Vice President for Technology at Ingersoll-Rand, he was a driving force in the field of mechanical engineering. Mr. Grant attended North Quincy High School, Quincy, Massachusetts; it is therefore his wish that this scholarship benefit graduates of this school who are enrolled in the College of Engineering. Preference is given to students majoring in mechanical engineering.

Greater Boston Consumer Credit Grantors Association Scholarship *College of Business Administration* In 1985, the Consumer Credit Grantors Association, Inc., established an endowed scholarship fund, the income from which is awarded annually to students from Massachusetts in their upperclass years majoring in business administration. Selection is based on financial need, academic promise, and soundness of character. Preference is given to students who express an interest in the field of consumer credit.

Clifton W. Gregg Memorial Scholarship *All Colleges* This scholarship was established through a bequest of Clifton W. Gregg, a 1915 graduate of the School of Commerce and Finance of Northeastern University. It was Mr. Gregg's request that "the income for this fund be used for

the assistance of financially needy students." The award may be made annually. Recipients are determined by the Committee on Scholarships.

Rabbi Myer O. Grunberg Scholarship *All Colleges* Established in 1953 by Mrs. Myer O. and Miss Rose Grunberg, this annual award is available to a senior student in any college of the University. The award is made to students who have evidenced in personal business and student relations those characteristics of leadership and human relations that make for a better social order. There is no restriction as to race, creed, color, or sex.

Curtis Lemar Haigh Memorial Scholarship Fund *All Colleges* This scholarship was established their love for him. Curtis Lemar Haigh was a 1981 graduate of Scituate High School, in Massachusetts, and a speech communication major in the Northeastern University Class of 1985. He died on February 1, 1985, before graduating from Northeastern. During his four years at Northeastern, Curtis was perhaps the most active staff member of WRBB, the campus radio station.

This scholarship is to be made annually to a speech communication major who is a member of the junior class at Northeastern University and who shows academic achievement and professional promise.

James F. Haley Scholarship Fund *College of Engineering* This fund was established in 1984 through the generosity of Haley & Aldrich, Inc., a leading consulting engineering firm, and the family of Mr. James F. Haley, a distinguished civil engineering graduate and a member of the Class of 1939. The income from the fund is used to assist deserving students majoring in civil engineering who display soundness of character, a stable academic record, and financial need.

Priscilla E. Hargreaves Scholarship *College of Engineering—Electrical Engineering* The Priscilla E. Hargreaves Scholarship for Electrical Engineering Students was established by husband William Hargreaves, E'28, as a loving tribute to a wife whose love and devotion meant so much to him. Income from this fund is awarded to electrical engineering students who have reached their second year, who show a need, and who have demonstrated reasonable academic responsibility.

Charles W. Havice Scholarship *All Colleges* This scholarship was established by the members of the Student Union upon the retirement of the former Dean of Chapel, Charles W. Havice. The income from the fund is awarded annually to upperclass students who are active in the Student Union. Students should demonstrate financial need.

Charles Hayden Memorial Scholarships *All Colleges* The Charles Hayden Foundation, created by the will of the late Charles Hayden, an alumnus of the Boston English High School, offers annual memorial scholarships to first-year students at Northeastern University. The scholarships are awarded to "deserving boys" whose parents are unable to finance the entire cost of their education.

David Hesketh Scholarship Fund *All Colleges* This fund was established in 1987 by Stanley Hesketh, Jr., a 1976 graduate of University College, in loving tribute to his brother David, a graduate of the College of Engineering, Class of 1972. The income from this fund is awarded annually to students who have worked at the University in providing service to handicapped college students attending Northeastern. The recipients must demonstrate financial need, and preference will be given to students majoring in health-care professions.

Oscar and Zelia Hodgkins Memorial Scholarship *Boston-Bouvé College of Human Development Professions* The Oscar and Zelia Hodgkins Memorial Scholarship Fund, established in 1986, provides financial assistance to students enrolled in Boston-Bouvé College who demonstrate financial need and academic achievement. This scholarship is awarded annually to an entering freshman and will continue for each subsequent year as long as the student remains in Boston-Bouvé College and demonstrates normal academic progress.

Kathryn S. Horbal Scholarship *College of Engineering—Chemical Engineering* The Kathryn S. Horbal Scholarship for female chemical engineering students was established by Kathryn's family as a loving tribute to a daughter whose short lifetime meant so much to so many. Income from this fund is awarded to female chemical engineering students who have reached at least their middler year and who have demonstrated academic responsibility.

Richard Melvin Horwitz Memorial Award for Excellence in Electrical Engineering *College of Engineering—Electrical Engineering* The Richard Melvin Horwitz Memorial Award for Excellence in Electrical Engineering was established in 1967 by Leonard J. Horwitz in memory of his brother,

Richard Melvin Horwitz, a member of the Class of 1945 in the College of Engineering who died in action during World War II. The award recognizes academic achievement and excellence and is presented annually to an outstanding undergraduate senior majoring in electrical engineering.

Walter F. Howe Memorial Scholarship *College of Business Administration* This fund was established in memory of Walter F. Howe, Class of 1968, who, within one week after graduation, was fatally wounded while pursuing thieves who had stolen his landlord's car. The scholarship was established through the generosity of Walter's friends and relatives in memory of his ideals of good citizenship and civic responsibility. It is awarded annually to a student in the College of Business Administration who demonstrates not only financial need but good citizenship and civic responsibility. The scholarship is open-ended, so that additional sums can be added to it in future years, and is awarded by the University without restrictions as to race, color, geographic origin, or scholastic attainment.

Edward L. Hurtig Scholarship *All Colleges* This scholarship was established in 1968 through the generosity of the Hurtig family in memory of Edward L. Hurtig, an alumnus of the College of Engineering, Class of 1946. The scholarship is awarded annually to an entering freshman in the day colleges who has demonstrated the need for financial aid. Preference is given to recipients of the Supplemental Educational Opportunity Grants Scholarship Program of the United States Office of Education.

Maurice A. and Nellie L. Idelson Award *All Colleges* This award, established in 1968, is given annually to an entering freshman in the day colleges who has demonstrated the need for financial aid. Preference is given to graduates of the Boston English High School. Should there be no qualified candidate from this source, the award will then be given to any worthy student.

Jamaican Associates, Inc., Scholarship *All Colleges* The Jamaican Associates, Inc., Scholarship, established in 1981 by the Jamaican Associates, Inc., is awarded annually to a student who is either a citizen of Jamaica and who intends to return to Jamaica upon graduation or to a student who is of Jamaican descent. Preference is given to a second-year student with demonstrable financial need and proven academic performance.

George and Florence R. Jamieson Scholarship Fund *College of Business Administration* This fund was established in 1984 through the generosity of Mr. George Jamieson in the name of his parents. The donor, Mr. Jamieson, majored in accounting at Northeastern, graduated with the Class of 1959, and has used his preparation at Northeastern to distinguish himself with the firm of Price Waterhouse & Co., where he is a partner. The income from his gift is used to assist deserving students majoring in business administration who display soundness of character, a stable academic record, and financial need. Preference is given to students majoring in accounting.

Joseph Anthony Johnson Scholarships *College of Engineering—Mechanical Engineering* Established in 1968 by the will of the late Joseph Anthony (Johansen) Johnson of the Class of 1928, the income provides scholarship aid for students enrolled in the Department of Mechanical Engineering, with preference given to students of Scandinavian origin.

Ralph P. Johnson Scholarship Fund *Electrical Engineering and Computer Science* Administered by the Office of Financial Aid and awarded to a computer science or electrical engineering major, this fund was established in 1980 by David R. Johnson, an alumnus of the Class of 1970, in honor of his father. It is the donor's desire that recipients of this fund assume the moral obligation to reimburse the fund in future years as they may be able in order to make additional financial aid available for other students.

Kerkor Kassabian Athletic Training Endowed Scholarship Fund *All Colleges* This fund was established in October 1986 by relatives, friends, and former students of Kerkor (Koko) Kassabian, whose name is synonymous with the field of athletic training in New England. Koko, the head athletic trainer at Northeastern from 1953 to 1965, is a member of the Northeastern University Varsity Club Hall of Fame and the National Trainer's Association Hall of Fame and an associate professor of Health, Sports, and Leisure Study at the University, where he also directs the athletic training curriculum. The income from the fund is awarded to students pursuing a Bachelor of Science in Education degree with a specialization in athletic training.

Dr. LeRoy C. Keagle Memorial Scholarship Fund *College of Pharmacy and Allied Health Professions* The Dr. LeRoy C. Keagle Memorial Scholarship Fund was established in 1975 through the generosity of family and friends of Dr. LeRoy C. Keagle, a man of high integrity and commitment to the profession of pharmacy who, at the time of his death on December 15, 1974,

was dean of the College of Pharmacy and Allied Health Professions at Northeastern University. The income from this scholarship fund is awarded annually to a student in the undergraduate pharmacy program who is entering the junior or senior class. Recipients must demonstrate financial need, academic stability, and soundness of character.

Robert G. Keene Memorial Scholarship Fund *All Colleges* This fund was established in 1979 in memory of Robert G. Keene, a graduate of Lincoln College, Class of 1972. The endowment funds were provided by the friends and associates of Robert G. Keene and by the Polaroid Corporation, where he served as an engineering manager. The income from the fund is awarded annually to an undergraduate student who demonstrates financial need as well as strong character and initiative. Primary consideration is given to children of Polaroid employees.

Eunice Kenyon Memorial Scholarship Fund *All Colleges* This fund was established in 1985 by the family of the late Eunice Kenyon, an outstanding and dedicated professional in the field of blindness and special education. Income from the fund is awarded annually on the basis of financial need to a blind student or a student preparing for the field of medicine with emphasis on treating the blind.

Virginia DeVaux Kerr Scholarship *College of Engineering/College of Nursing* This fund was established in 1984 through the generosity of George R. DeVaux. Mr. DeVaux graduated from the College of Engineering with the Class of 1963. His gift established this fund in honor of his mother, Virginia DeVaux Kerr, to benefit those students majoring in engineering or nursing who display soundness of character, a stable academic record, and financial need.

Martin Luther King, Jr., Scholarship *All Colleges* The Martin Luther King, Jr., Scholarship is granted annually to incoming freshman, graduate, and transfer minority students who have demonstrated the philosophy of peaceful coexistence and change through nonviolent means espoused by Dr. King and who have an above-average scholastic record. The scholarship, in the amount of \$500, requires a minimum quality-point average. Financial aid based on need is available to supplement the scholarship.

Andrew C. Knudsen Memorial Scholarship *College of Engineering* The Andrew C. Knudsen Memorial Scholarship was established in 1982 by Johanna M. Knudsen in memory of her beloved brother, Andrew C. Knudsen, LI'52, B'55, who passed away on April 14, 1978. The scholarship award is to be made annually to two students, preferably one in the College of Engineering and one in the Alternative Freshman-Year Program, who have demonstrated leadership qualities, have proved worthy, and are of good character. Based on financial need, the awards are made annually from the income of the fund.

Vena Morse Lamson Scholarships *All Colleges* These scholarships are provided through the income of a fund established in 1963 by Horatio W. Lamson in memory of his beloved wife. They are awarded annually to needy and worthy students who are enrolled in any of the Basic Colleges of the University. The scholarships are granted by the Committee on Financial Aid of the University without regard to national origin, sex, race, or creed.

Irving Landfield Scholarship *All Colleges* This fund was established in 1972 through the generosity of Irving Landfield, a graduate of the School of Commerce and Finance of Northeastern University, Class of 1923. The income from the fund is awarded annually to help deserving and needy students who demonstrate a desire to fulfill the limits of their ability in academic and cooperative periods of study. The income from this fund is administered and awarded by the University without restriction to race, color, creed, geographic origin, or scholastic attainment. It is Mr. Landfield's desire that recipients of the scholarship assume a moral obligation to contribute to the principal of this fund, as they may be able, in order to make additional financial aid available for other students in later years.

George M. and Irene M. Lane Scholarship Fund *All Colleges* This scholarship fund was established in 1979 by the family of Dr. George M. Lane to honor his memory. Dr. Lane's faithful and dedicated service to Northeastern University extended from 1943 to 1975, at which time he retired as director of University Health Services. The income from the George M. and Irene M. Lane Scholarship Fund is awarded annually to an upperclass member of the University's varsity football or hockey team who demonstrates financial need, academic stability, and soundness of character. Family gifts as well as contributions from friends and associates may be added to the scholarship's endowment.

Avrom Aaron Leve Memorial Scholarship *College of Arts and Sciences—Psychology* This scholarship fund was established in 1957 in memory of Dr. Avrom Aaron Leve, former assistant professor of psychology. The interest is used annually to provide scholarships for upperclass

students majoring in psychology. The award is made on the basis of academic achievement, financial need, and character.

Austin T. and June Rockwell Levy Scholarship *All Colleges* This fund was established in 1984 through the generosity of the June Rockwell Levy Foundation to assist deserving Rhode Island undergraduate students with tuition and living expenses. The fund memorializes the concern for the welfare of Rhode Island residents that was shared by Austin T. Levy, an innovator in business and philanthropy, and his wife, June Rockwell Levy.

William F. Linskey Scholarship Fund *All Colleges* This fund was established in March 1980 by alumni and friends of William F. Linskey, an athletic trainer long associated with young athletes in and around the Greater Boston area. A former head trainer for the Northeastern University football team and head hockey coach during the 1942–43 season, Linskey has served the City of Cambridge School Department as head athletic trainer and physical therapist for more than thirty years. The income from the fund is awarded to worthy students pursuing courses leading to a Bachelor of Science in Education with a specialization in athletic training.

Russell T. Lowe Memorial Scholarship Fund *College of Engineering—Mechanical Engineering* This fund was established in 1976 in memory of Russell T. Lowe, a graduate of the College of Engineering, Class of 1953. The endowment funds were provided by the friends and associates of Russell Lowe and by the Barry Wright Corporation, where he served as a member of the board of directors and as president of the Industrial and Aero Products Group. The income from the fund is awarded annually to one or more upperclass students enrolled in the College of Engineering. Preference is given to mechanical engineering majors on the basis of demonstrable financial need and above-average scholastic achievement.

Edward J. Lynn Scholarship *College of Business Administration—Accounting* This fund was established in 1984 in honor of Edward J. Lynn upon his retirement by friends and associates and by The Continental Group, where he served as controller. Mr. Lynn was responsible for establishing the extensive cooperative education relationships between Northeastern University and his company. The income from the fund is awarded annually to an upperclass student enrolled in the accounting program of the College of Business Administration. Preference is given to students who demonstrate financial need and above-average scholastic achievement.

George A. MacConnell Scholarship *College of Business Administration* This scholarship was established in 1986 by George A. MacConnell, a 1971 graduate of the Northeastern University College of Business Administration and a senior vice president of Georgia-Pacific Corporation, where he began his employment in 1971. The income from this scholarship fund is awarded annually to upperclass College of Business Administration students participating in the Cooperative Plan of Education who demonstrate financial need and academic stability.

Gilbert G. MacDonald Scholarship *All Colleges* This scholarship was established in 1981 by the family of Gilbert G. MacDonald, former vice president for student affairs and dean of students, and the members of the Student Union. The income from the fund will be awarded annually to upperclass students of proven ability and demonstrable financial need. Preference is given to students who participate actively in the Student Union.

Mary E. MacKinnon Scholarship Fund *College of Arts and Sciences* This annual scholarship was established in 1987 by Robert J. MacKinnon, LA'60, as a loving tribute to his mother. The income from this fund is used to assist a sophomore student in the College of Arts and Sciences who is a U.S. citizen and a resident of Massachusetts, with a preference given to students who have resided in Quincy. The recipient will have demonstrated financial need and academic ability during his or her freshman year at Northeastern University.

Ann Marie Maida Memorial Football Scholarship Fund *All Colleges* This scholarship was established by Vito and Lucy Maida in memory of their beloved daughter, Ann Marie, as a tribute and expression of their love for her and her dedication to her teaching career. Ann Marie passed away in December 1988.

This scholarship is awarded annually to a deserving football player who demonstrates financial need, academic stability, and the soundness of character that best exemplifies the Northeastern University athlete.

Dr. Reuben J. Margolin Memorial Scholarship Fund *Boston-Bouvé College of Human Development Professions* The Dr. Reuben J. Margolin Memorial Scholarship Fund was established in 1973 through the generosity of family and friends of Dr. Reuben J. Margolin, an outstanding and

dedicated individual and friend who, at the time of his death on April 6, 1972, was chairman of the Department of Rehabilitation and Special Education at Northeastern University.

The income from the Dr. Reuben J. Margolin Memorial Scholarship Fund is awarded annually to a deserving student admitted to or enrolled in the Graduate School of Boston-Bouvé College of Human Development Professions and majoring in rehabilitation and/or special education. Recipients must demonstrate financial need as well as the personal and professional qualities exemplified by Dr. Margolin.

Peter J. Martin Scholarship Fund *College of Business Administration* This fund was established in 1986 under the provisions of the will of Peter J. Martin, a 1949 graduate of the Northeastern University School of Business. Mr. Martin designated that the income of this fund should be used to provide financial assistance to upperclass students of proven ability and demonstrable financial need in the College of Business Administration.

George T. Marvin Scholarship Fund *All Colleges* This fund was established in 1961 under the provisions of the will of George T. Marvin, a graduate of the Northeastern University School of Law, Class of 1918. Mr. Marvin designated that the income of this fund should be used to provide financial assistance to worthy and needy students to assist them in furthering their education at Northeastern University.

George T. Marvin scholarships may be awarded to new students seeking admission to Northeastern and to freshman and upperclass students. Applicants must have satisfactory records of scholarship as of the time of making application and must demonstrate genuine need and good citizenship.

Merchants Tire Company Scholarship Fund *College of Business Administration* This scholarship was established in 1972 by Merchants Tire Company in honor of Max Katz, a Class of 1917 alumnus of Northeastern and founder and chairman of the board of Merchants Tire Company. The scholarship is awarded annually with selection preference given to a son or a daughter of a current employee of Merchants Tire Company enrolled as a freshman within the College of Business Administration who demonstrates financial need, soundness of character, and academic stability.

Dean Constantine N. Meriano Memorial Scholarship *College of Pharmacy and Allied Health Professions* This scholarship, established by the Class of 1950 of the New England College of Pharmacy and subsequently supported by all classes of the New England College of Pharmacy and the Northeastern University College of Pharmacy and Allied Health Professions, is named to honor the memory of Constantine N. Meriano, who was the founder, dean, and chief executive officer of the New England College of Pharmacy until his retirement in 1957. In 1962, the New England College of Pharmacy merged with Northeastern University, and it is now known as the College of Pharmacy and Allied Health Professions. The scholarship is awarded annually to one or more students of the College. Selection will be made by the Committee on Scholarships and will be based on financial need, academic stability, and soundness of character.

George H. Meserve, Jr., Scholarship Fund *College of Arts and Sciences* This scholarship was established in 1979 through the generosity of Robert W. Meserve in honor of his brother, Professor George H. Meserve, Jr., an alumnus of the Class of 1925. Professor Meserve served Northeastern faithfully and with distinction for forty-two years, retiring in 1968 as professor and chairman of the Department of Art. Announced at the ceremony dedicating George H. Meserve Hall on the Boston campus, this scholarship benefits worthy undergraduate students who are majoring in art. Recipients should demonstrate financial need, academic stability, and soundness of character.

Harash Mitroo Memorial Athletic Scholarship *All Colleges* This scholarship was established in 1983 through the generosity of the Mitroo family of New Delhi, India, in memory of Mr. and Mrs. Mitroo's son, Harash, a student in the College of Business Administration who was killed in an automobile accident in 1978. A talented artist and outstanding athlete, Harash received numerous awards for his paintings and for his athletic abilities, including a medal for his performance in an international cricket match against Ceylon.

This scholarship is awarded annually, with preference given to international students, to a member of the varsity men's intercollegiate team in basketball, football, hockey, or track, who demonstrates financial need, soundness of character, and a spirit of good sportsmanship and fellowship. A trophy, designated as the Harash Mitroo Memorial Trophy in Athletics and inscribed with the names of scholarship recipients, is on permanent display at the University.

Clyde W. Morrison Scholarship Fund *All Colleges* The Clyde W. Morrison Scholarship was established in 1974 by Clyde W. Morrison, a member of the Class of 1942. The scholarship is awarded annually to a Braintree resident enrolled as a freshman, with a demonstrable financial need. Selection is made by the Committee on Scholarships.

Morse Shoe, Inc., Scholarship Fund *College of Arts and Sciences* This fund was established in 1984 by Morse Shoe, Inc. Endowment income is used to provide scholarship assistance for an undergraduate who demonstrates financial need, academic stability, and soundness of character. Preference will be given to students from Massachusetts.

Frederick W. Muckenhoupt Scholarship *All Colleges* This award was established in 1961 by Dr. and Mrs. Carl F. Muckenhoupt in memory of their son, Frederick W. Muckenhoupt, Class of 1959 of the College of Engineering. The award is made annually to a student in good standing on the basis of need. Preference is given to a student enrolled in the Department of Electrical Engineering.

Muro Pharmaceutical, Inc., Scholarship *College of Pharmacy and Allied Health Professions* This annual scholarship was established in 1985 through the generosity of George D. Behrakis (Pharmacy '57), president, and his wife, Margo. The fund is restricted to students in their mid-dler, junior, or senior years who are pursuing the degree of Bachelor of Science in Pharmacy. Recipients must have demonstrated high academic ability and financial need.

Elizabeth A. Neilson Scholarship *Boston-Bouv  College of Human Development Professions* The Elizabeth A. Neilson Scholarship Fund was established in 1976 in memory of William H. and Anastasia Neilson, exemplars of the profession of health education during their lifetimes. The income from the scholarship fund is awarded annually to a student or students with the highest scholastic record majoring in health education, who have completed eight quarters of academic study, with at least four quarters having been taken at Boston-Bouv  College of Human Development Professions. The student(s) must typify the philosophy of the health education profession.

Shaun Ouillette Memorial Scholarship Fund *College of Criminal Justice* Established in the memory of Shaun Ouillette, a fourteen-year-old Canton boy murdered in 1986 by a classmate, this scholarship fund is designed to provide tuition assistance at the College of Criminal Justice to an incoming freshman. Reflecting what were Shaun's aspirations, preference is given to a student who is pursuing a career in law enforcement.

Thomas Anthony Pappas Scholarship Fund *All Colleges* This fund was established in 1980 by the Thomas Anthony Pappas Charitable Foundation. Endowment income is used to provide scholarship assistance to needy students with high scholastic records.

Mary Alice (King) Parsons Memorial Scholarship Fund *School of Journalism* This fund was established in 1985 in memory of Mary Alice (King) Parsons, who graduated with high honors in journalism with the Class of 1971. Her writing, and her contributions to her profession and to those who knew her, are recognized by the generous gifts that established this endowment. The income from this fund is awarded annually by the School of Journalism to assist deserving undergraduate journalism majors who display professional promise and soundness of character. Preference is given to female students.

M.F. Patrick Scholarship Fund *All Colleges* This scholarship fund was established in 1987 by a bequest from Hilda Winslow, a 1916 graduate of Boston-Bouv  College, to provide financial assistance to students who demonstrate financial need, academic promise, and soundness of character and who either were born in or reside in Provincetown, Massachusetts.

Amelia Peabody Honors Scholarships *All Colleges* This endowment was established in 1988 by the Amelia Peabody Charitable Fund to benefit students participating in the University Honors Program. These scholarships are especially meaningful to the Northeastern University community because Miss Peabody was a generous benefactress and a very dear friend of the University during her lifetime. She was also the first woman ever chosen to serve on the Northeastern University Corporation and Board of Trustees. A talented sculptress, Miss Peabody was awarded an honorary Doctor of Fine Arts degree by the University in 1965 in recognition of her artistic talents and humanitarian contributions.

Power Systems Engineering Grants-in-Aid *College of Engineering—Electrical Engineering* A number of public utilities and power equipment manufacturing companies in the northeastern part of the United States have made available grants-in-aid ranging from \$1,000 to \$5,000 to assist able freshmen who are interested in pursuing careers in power systems engineering

through study programs leading to the bachelor of science or master of science in electrical engineering degree. These awards are made on the basis of academic achievement in high school and aptitude for, and interest in, the field of power systems engineering, without regard to financial need. Candidates for such grants-in-aid should apply to the Dean of Admissions at Northeastern University not later than March 1 of the year in which they wish to enter the College of Engineering.

Lawrence Harlow Pratt Athletic Scholarship Fund *All Colleges* This fund was established in 1979 by the Northeastern University Varsity Club in conjunction with the Athletic Development Program Fund Drive to honor and recognize Lawrence Harlow Pratt. For more than four decades, Larry was the spirit of Northeastern athletics. His greatest joys were the young men he persuaded to attend college. He encouraged them, cajoled them, sometimes scolded them, but always inspired them to complete their intercollegiate careers and go on to become outstanding members of the community. The income from the fund is awarded annually to a financially deserving varsity athlete(s).

Charles Protaps Endowment Fund *All Colleges* This fund was transferred to Northeastern University in 1983. It was established through the will of Charles Protaps, a Lithuanian immigrant who became a common laborer in this country. The purpose of the fund is to aid men and women of Lithuanian extraction to acquire a higher education. The income of this fund is used to provide low-interest loans of up to \$500 to needy and gifted students of Lithuanian extraction who are pursuing a degree program at Northeastern University. Interest of five percent will begin to accrue when the student either withdraws or graduates from Northeastern.

Gay Miller Reese Memorial Scholarship *Boston-Bouvé College of Human Development Professions* The Gay Miller Reese Memorial Scholarship was established in 1971 by Everett Reese, in memory of his wife, and by members of the Class of 1921 at their fiftieth reunion in honor of their classmate and class president, Gay Miller Reese. This scholarship is awarded annually to help a well-qualified upperclass student in Boston-Bouvé College of Human Development Professions acquire the education that could not otherwise be possible. The recipient of this award is selected by the Committee on Scholarships.

Regional Scholarships *All Colleges* Secondary school students who reside in rural areas of New England, who have demonstrated superior achievement in their studies, and who are strongly endorsed by their principals and guidance counselors may qualify for a Regional Scholarship. Scholarships range from \$200 to \$1,400.

Myer Riesman Scholarship *College of Nursing* This fund, established in 1969 in memory of Myer Riesman, is used to provide financial assistance to deserving students in the College of Nursing. Preference is given to those students whose clinical experience is at Beth Israel Hospital.

Edward T. Rigney Scholarship *All Colleges* A fund was established in 1978 by a grant from the Trans-Sonics Foundation in memory of Edward T. Rigney, member of the Class of 1941 and cofounder of Trans-Sonics, Inc. Income is awarded annually to a student showing financial need and promise of success in his/her chosen field and who is enrolled in engineering, science, or science-related studies. The scholarship may be granted to a freshman or upperclass student and may be renewed in succeeding years.

Isedore Rosenthal Fund *College of Business Administration* The Isedore Rosenthal Fund was established in 1981 by Mrs. Isedore Rosenthal and friends in memory of her husband, a distinguished graduate of the School of Commerce and Finance (1925) and the School of Law (1931). Income from the fund is awarded each year, on the basis of financial need, to freshman accounting majors for the purchase of books and materials. It is the donor's desire that recipients assume the responsibility in future years to contribute to the principal of this fund, as they may be able, in order to make additional resources available for other students in later years.

Thomas A. Rosse Scholarship *College of Arts and Sciences/ College of Engineering* The Thomas A. Rosse scholarship was originally established in December 1979 by the generosity of the Thomas A. Rosse family. The scholarship is awarded annually to science or engineering male student athletes who demonstrate financial need, academic stability, and soundness of character.

Susan M. Russell Scholarship *All Colleges* The fund was established in 1988 through the generosity of Sidney L. Russell, of Lynn, Massachusetts, in memory of his wife. Income from the fund is awarded to undergraduate students in the junior or senior class who demonstrate aca-

demic promise and good character but require financial assistance to achieve their educational potential.

Frank B. Sanborn Scholarship Fund *College of Engineering* The Frank B. Sanborn Scholarship Fund was established in 1958 to provide a scholarship or scholarships of not more than \$500 to worthy and needy students selected by the University, without restrictions as to race, creed, or geographic origin, but with preference being given to students majoring in electrical, mechanical, civil, or industrial engineering, in the order stated. Recipients must be willing to assume a moral obligation to reimburse the fund, as they may be able, to make similar financial aid available for other students in later years. There shall be no interest charged and no time specified for reimbursement.

Caroline M. and William J.A. Schafer Scholarship *All Colleges* This scholarship fund was established in 1988 by William T. Schafer, B.A., '31, in honor of his parents. Endowment income is to be used to provide scholarship assistance to needy students who demonstrate financial need, soundness of character, and academic stability.

Helen Seamans Schafer Scholarship *College of Business Administration* The Helen Seamans Schafer Scholarship Fund for business administration students was established by William T. Schafer, B.A., '31, as a tribute to his wife, Helen, whose love and devotion meant so much to him. Income from this fund is awarded to upperclass students in the College of Business Administration. Consideration is based on financial need, academic stability, and soundness of character.

Clinton H. Scovell Scholarships *Boston-Bouvé College of Human Development Professions* Scholarships are made available to men and women students in Boston-Bouvé College of Human Development Professions through a fund provided by the will of Clinton H. Scovell.

Joseph M. Segel Scholarship *All Colleges* This scholarship fund was established January 9, 1981, by Martin F. Walsh, '52, and his wife, Pauline, to honor Joseph M. Segel on the occasion of his birthday. In 1964 Mr. Segel founded the Franklin Mint, which today is the nation's largest privately owned mint. The entrepreneurial ethic of Mr. Segel is much the same as that demonstrated by many Northeastern alumni. Therefore, it is Mr. Segel's desire that recipients of this award demonstrate this quality and also show financial need.

Sidney L. Sholley Memorial Scholarship *All Colleges* The Sidney L. Sholley Memorial Scholarship has been established in memory of the founder and first president of Keystone Custodian Funds, Inc. Each year the trustees of the Sholley Foundation, Inc., provide a scholarship of \$3,500 to be awarded by the University to an outstanding incoming first-year student. The recipient is known as the Sidney L. Sholley Scholar.

George A. and Lorraine C. Snell Scholarship *All Colleges* This fund was established in 1973 by Mr. George A. Snell, a graduate of the College of Engineering, Class of 1941, and a member of the Northeastern University Corporation and Board of Trustees, and his wife, Lorraine C. Snell. The income from the fund is awarded annually to one or more students enrolled in the Basic Colleges of Northeastern University. Selection is made by the Committee on Scholarships on the basis of financial need, academic stability, and soundness of character.

Peter V. Sorgi Scholarship Fund *College of Business Administration* This fund was established in 1986 by Peter V. Sorgi, a graduate of the College of Business Administration, Class of 1943. Income from the fund will be awarded annually to one or more students enrolled in the College of Business Administration. Awards are based upon financial need, academic stability, and soundness of character.

John Stuart Sousa, Jr., Memorial Scholarship Fund *College of Pharmacy and Allied Health Professions* This scholarship was established in 1968 in memory of John S. Sousa, Jr., of Fall River, Massachusetts, a student in the College of Pharmacy, Class of 1969, by his family and friends. The scholarship is awarded annually with selection preference given to a male or female student entering his/her senior year in the College of Pharmacy and Allied Health Professions who has obtained a cumulative quality-point average of at least 2.3, demonstrates financial need, participates in extracurricular activities, and is, preferably, a member of a fraternity or sorority.

Southeastern Massachusetts Pharmaceutical Association Scholarship Fund *College of Pharmacy and Allied Health Professions* This scholarship was established in 1980 by the Southeastern Massachusetts Pharmaceutical Association. The income from the fund is awarded annually to one or more middler, junior, or senior students enrolled in the College of Pharmacy and Allied

Health Professions who are residents of the area covered by the Southeastern Massachusetts Pharmaceutical Association (Greater Fall River, Greater New Bedford, and the Cape Cod areas). Recipients must be pharmacy majors and must demonstrate financial need, academic stability, and soundness of character.

Lillian M. Spelman Memorial Scholarship *College of Nursing* This scholarship was established in 1979 by a bequest from Lillian M. Spelman, a resident of Boston who, as a public health nurse, dedicated her life to helping others. Her career began in the West End of Boston in the early 1900s. She served her country unselfishly as a Red Cross nurse in Europe during the First World War. Through this scholarship she continues to help others. Scholarship recipients must exhibit financial need as well as academic stability and soundness of character.

Student Loan Fund—Health Professions *Boston-Bouvé College of Human Development Professions/College of Nursing/College of Pharmacy and Allied Health Professions* In 1974, a foundation established a perpetual loan fund at Northeastern University to benefit full-time students enrolled as middlers, juniors, and seniors in Boston-Bouvé College of Human Development Professions, the College of Nursing, and the College of Pharmacy and Allied Health Professions. This loan fund aids those students who have a substantial investment in and commitment to the health professions and who require some financial help to complete their preparation.

Student Loan Fund—Stop & Shop Companies, Inc. *All Colleges* Established in 1974 by the Stop & Shop Companies, Inc., the Student Loan Fund is a combination endowment and revolving fund to be funded by \$100,000. This generous gift recognizes the contribution, in human terms, made through the years by Northeastern to Stop & Shop, which at the time the Loan Fund was established counted more than 120 Northeastern men and women in its executive ranks, seven of them vice presidents. The Loan Fund assists students who have a substantial investment in their education but are in need of some financial stimulus to aid them in completing their work.

Ruth Page Sweet Scholarship Fund *Boston-Bouvé College of Human Development Professions* This fund was established in 1959 by members of the Class of 1919 and alumnae of the Boston-Bouvé School in honor of their classmate, Miss Ruth Page Sweet, dean of women in the school from 1929 to 1946, administrative director from 1946 to 1948, and director from 1948 to 1958. The scholarship is presented to a junior or senior who has demonstrated a high level of professional promise indicated by academic record and extracurricular activities.

Frederick L. Tapper Scholarship Fund *All Colleges* This fund was established in 1987 by the wife and children of Frederick L. Tapper to commemorate his sixtieth birthday and his regard for Northeastern University. Mr. Tapper was accepted by Northeastern University in 1948 but could not attend because of a lack of funds. He did, however, achieve success in his own business and as a provider for his family. This fund was established as an expression of Frederick Tapper's admiration for Northeastern University and its mission to help students fulfill their goals, as he did.

Scholarship awards from the fund are made to deserving undergraduate students who demonstrate financial need, soundness of character, and academic promise.

Sidney and Marilyn Tartarkin Scholarship Fund *All Colleges* This fund was established in 1986 in honor of Mr. Tartarkin's sixtieth birthday. Initial endowment funds were provided by Sidney and Marilyn Tartarkin, with later contributions by family, friends, and associates. The income from the fund is awarded annually to one or more upperclass students participating in the Cooperative Plan of Education. Awards are given on the basis of demonstrable financial need, without regard to religion or race, and of an individual's desire to fulfill the potential of his or her academic ability. Preference is given to students who were without a father in junior and senior high school. It is the desire of the donors that scholarship recipients assume a moral obligation to add to this fund, as they may be able, in order to increase aid available in the future.

Alice Taylor Scholarship *All Colleges* Northeastern University recognizes that Alice Taylor, who passed away in 1982, is remembered as a positive force by the Mission Hill community and even more by the tenants of the Mission Hill Extension housing development. Because of Ms. Taylor's contributions, the University has made available to five freshmen who are residents of Mission Hill Extension full-tuition Alice Taylor scholarships for the first year.

A. Gilbert Tenney Scholarship Fund *College of Engineering—Electrical Engineering* This fund is in memory of A. Gilbert Tenney, who served as a captain in the Air Force during the Korean

War and was killed while in active service. Income from the fund is awarded to a needy student or students in the field of electrical engineering studying under the Cooperative Plan of Education.

Reginald C. Thomas Memorial Scholarship *Department of Biology* This fund was established in 1988 through the generosity of Mrs. Reginald C. Thomas and her son, Royce C. Thomas, as a memorial to Colonel Reginald C. Thomas, a 1941 graduate of the College of Arts and Sciences. A distinguished scientist and teacher, Reginald Thomas was responsible for establishing the microbiology laboratory at Northeastern University. Colonel Thomas's further scholastic undertakings, his teaching credentials, and his dedication to his chosen field were recognized in his appointment as the Director of Medical Intelligence, Office of the Surgeon General, U.S. a position he held until his retirement in 1972. The scholarship is awarded annually to upper-class students majoring in biology and demonstrating financial need.

Almore I. Thompson Memorial Scholarship Fund *College of Business Administration* This fund was established in 1986 in memory of Almore I. Thompson, a graduate of the College of Business Administration, Class of 1938. Mr. Thompson was a member of the Northeastern University Corporation and also served as a director of the National Council. The endowment funds were provided by members of his family and by friends. Income from the fund is awarded annually to one or more students enrolled in the College of Business Administration on the basis of financial need and satisfactory academic performance.

Earl H. Thomson Memorial Scholarship *All Colleges* This fund was established in 1971 to honor the memory of Earl H. Thomson, a distinguished alumnus of the Class of 1925. Mr. Thomson became an internationally known trademark attorney as senior partner in the firm of Thomson and Thomson. A member of the Northeastern Corporation since 1958 and a trustee of the University since 1960, he was also a director of the National Council, former president of the Northeastern Alumni Association, and a member of the board of directors of Nu Epsilon Zeta fraternity.

This scholarship is awarded annually to one or more deserving and needy students enrolled as freshmen and/or upperclass students who demonstrate a desire to fulfill the potential of their ability in academic and cooperative periods of study. The scholarship is open-ended so that sums can be added to it in future years, and it is administered and awarded by the University without restrictions as to race, creed, geographic origin, or scholastic attainment. It would be Mr. Thomson's desire that scholarship recipients assume a moral obligation to reimburse this or other scholarship funds, as they may be able, in order to make additional financial aid available for other students in later years.

James M. Thornton Memorial Football Scholarship Fund *All Colleges* This scholarship was established by friends of James M. Thornton and by the Northeastern University Varsity Club as a tribute and expression of their love for him. A 1967 graduate, Jim had a great interest in the athletic programs of Northeastern University, Madison Park and Brookline High Schools. As an outstanding athlete, Jim played halfback on the undefeated 1963 Northeastern team and in 1982 was inducted into the Northeastern University Hall of Fame. He was the athletic director and assistant headmaster at Madison Park High School prior to his untimely death. Preference in awarding this scholarship is given to City of Boston high school and Town of Brookline schoolboy athletes.

Oliver S. Titcomb Memorial Scholarship *College of Engineering* This scholarship was established in 1987 by Dr. and Mrs. Stanley C. Titcomb, son and daughter-in-law of Oliver, a member of the Class of 1925, College of Engineering. The scholarship is awarded annually to one or more freshman students enrolled in the College of Engineering with demonstrable financial need. Preference is given to students who come from the Greater Boston area.

Gerald F. Tonks Scholarship *All Colleges* This scholarship was established in 1986 under the provisions of the will of Gerald F. Tonks to benefit undergraduate students who demonstrate satisfactory records of scholarship and genuine financial need. Mr. Tonks, who retired from Liberty Mutual Insurance Company in 1965 after thirty-eight years of service, manifested a lifelong interest in and commitment to safety and health in the workplace. Scholarship awards, not to exceed fifty percent of the recipient's annual tuition, are to be made yearly to bachelor of science degree candidates enrolled in the College of Engineering and in selected departments within the College of Arts and Sciences and to Bachelor of Engineering Technology or associate in science degree candidates within the School of Engineering Technology.

Eliot F. Tozer Memorial Scholarship *College of Business Administration/College of Engineering* This fund was established in 1972 through the generosity of the members of the Class of 1931

in memory of their faculty adviser, Eliot F. Tozer. The scholarship of \$750 is awarded annually to students of proven need in the middler, junior, or senior classes of the day colleges of engineering or business administration. The scholarship is open-ended so that sums can be added to it in future years, and it is administered and awarded by the University without restrictions as to race or creed.

Charles Irwin Travelli Scholarships *All Colleges* Numerous scholarships have been given yearly since 1932 to students demonstrating financial need, high academic achievement, and an active interest in University life as shown by participation in one or more major activities. Students are usually honored as recipients of Travelli Scholarships at the completion of their freshman year. Under normal circumstances, these awards continue through the senior year.

Trustee Scholarships *All Colleges* Established in 1928 by the Board of Trustees of Northeastern University, these full- and partial-tuition scholarships are granted in the Basic Colleges each year to entering freshmen who have demonstrated superior scholastic attainment throughout their preparatory or high school courses.

Robert E. Turner Memorial Scholarship Fund *College of Business Administration* This scholarship fund was established in 1978 through the generosity of family, friends, and colleagues in memory of Robert E. Turner, a 1952 graduate of Northeastern's College of Business Administration who was associated with the University for eighteen years. The income from this fund is awarded annually to assist a College of Business Administration undergraduate student majoring in accounting who demonstrates financial need, academic stability, and soundness of character.

Samuel Ulman Scholarship Fund *All Colleges* This fund was established in 1960 by Mrs. Samuel Ulman in memory of Samuel Ulman, a student at Northeastern University from 1912 to 1915. The purpose of the fund is to provide scholarship assistance to students in good academic standing who have financial need.

University Scholarships *All Colleges* Northeastern University has for many years maintained a scholarship fund for deserving, qualified students. These scholarships are awarded on the basis of need, scholastic standing, and campus citizenship. The recipient of a Northeastern scholarship must be willing to assume a moral obligation to repay the University at some future date.

UPS Foundation Scholarship Fund *College of Business Administration* This endowed fund was established in 1982 by the UPS Foundation, the sponsored foundation of United Parcel Services, Inc. The income from this fund is awarded annually to undergraduate students enrolled in the College of Business Administration who demonstrate financial need, academic stability, and soundness of character. In providing scholarships, preference is given to students majoring in the transportation concentration or planning to enter the transportation industry.

Jessica H. Valentine Memorial Scholarship Fund *College of Nursing* This fund was established in 1985 through the generosity of the family and friends of Jessica H. Valentine, a former College of Nursing student. The income from the fund is awarded annually to a student at the college who demonstrates financial need and academic stability.

Varsity Club Hall of Fame Scholarship Fund *All Colleges* This scholarship was endowed by the Varsity Club with an initial gift of \$5,000 in 1987. The scholarship is awarded annually to a deserving athlete who demonstrates financial need, academic stability, and the soundness of character that best exemplifies the Northeastern athlete.

Sabestino Volpe Scholarship Fund *College of Engineering—Civil Engineering* The Sabestino Volpe Scholarship Fund was established in 1972 through the generosity of Mr. Sabestino Volpe, a distinguished alumnus of the College of Engineering and a member of the Class of 1928. The income from the fund is awarded annually as a scholarship to an upperclass student enrolled in the day civil engineering degree program within the College of Engineering. Recipients must demonstrate financial need, academic stability, and soundness of character.

Henry Ellis Warren Scholarship Fund *All Colleges* This endowed fund was established in 1981 by the Warren Benevolent Fund, Inc., to honor the memory of Henry Ellis Warren of Ashland, Massachusetts. The income from this fund is awarded annually to undergraduate students who demonstrate financial need, academic stability, and soundness of character. In providing scholarships, preference is given to students from Ashland or contiguous communities.

Jacob Wasserman Scholarship *College of Pharmacy and Allied Health Professions* Established in 1966 by his friends in memory of Jacob Wasserman, this fund is to provide scholarship aid

to a senior student in the College of Pharmacy and Allied Health Professions. The award will be made annually on the basis of financial need, academic performance, and personal qualities.

WCVB Boston Scholarship for a Minority Student in Broadcast Communication *College of Arts and Sciences* This scholarship was established in 1984 by WCVB-TV Boston. The income from the fund is awarded annually to a junior, senior, or graduate minority student in broadcast communication, with preference given to a black, Spanish, Oriental, or American Indian student who is economically disadvantaged and to individuals who are residents of the New England states. The recipient must be an American citizen and taking courses in newswriting and/or TV news production and other required journalism courses. The scholarship is administered by the School of Journalism in conjunction with the Office of Financial Aid.

Edward R. Willett Fund *College of Business Administration* This fund was established in 1986 by Dr. Edward R. Willett, retired professor of finance, who served on the faculty of the College of Business Administration for thirty-eight years. Financial aid awards are to be made annually to students majoring in finance who demonstrate academic achievement.

Window Shop Scholarship Fund *All Colleges* This fund was established in 1988 through the generosity of the Window Shop Scholarship Committee. The Window Shop organization was created in 1939 by a small group of talented and enterprising Cambridge, Massachusetts, women who wanted to assist refugees from Germany and Austria by providing language- and job-skills training and employment in the shop. By 1972, their mission had been accomplished and the shop building was sold, with proceeds used to establish a scholarship fund. From 1972 to 1988, many Northeastern University students benefitted from this fund. In 1988, the Window Shop Scholarship Fund was terminated, and a portion of the endowment was given to Northeastern to create a new fund.

Income from this fund is awarded annually to new Americans who are refugees and demonstrate financial need.

Robert W. Yesucevitz Memorial Scholarship *College of Criminal Justice* This scholarship fund was established in 1983 in memory of Robert W. Yesucevitz, a federal police officer employed by the United States Federal Protective Service. Officer Yesucevitz was killed in the line of duty while serving at the John F. Kennedy Presidential Library, and this memorial was created by his family and friends, including many police officers. The income from the fund is awarded annually to a freshman in the College of Criminal Justice who demonstrates academic promise and financial need.

Albert B. Young Scholarship *College of Pharmacy and Allied Health Professions* This fund was established in 1986 to commemorate the fiftieth birthday of Albert B. Young. Mr. Young is a 1960 graduate of the College of Pharmacy and a loyal supporter of the University. Knowing of his regard for Northeastern, his family and friends have given in his name to create an annual scholarship award for pharmacy students in their junior or senior year who demonstrate financial need, academic promise, and soundness of character.

Joseph P. Zabilski Athletic Scholarship Fund *All Basic Colleges* This fund was established by the Northeastern University Varsity Club in recognition of Joseph P. Zabilski's thirty-five years of service to Northeastern University. Mr. Zabilski served with high distinction as teacher, varsity athletic coach, and athletic director. His dedication, enthusiasm, and loyalty to the Northeastern student athlete provided a model for all to emulate. It is with great pride that the Varsity Club membership provides this award in his name.

Other Scholarships

The following scholarships are funded by outside sources. See the Financial Aid section, page 35, for further information.

Dr. Martin E. Adamo Award *College of Pharmacy and Allied Health Professions* This award of \$200 is given annually by the Boston Association of Retail Druggists in memory of Dr. Martin E. Adamo, the second president of the New England College of Pharmacy.

American Foundation for Pharmaceutical Education Scholarships *College of Pharmacy and Allied Health Professions* The Board of Grants of the American Foundation for Pharmaceutical Education provides \$600 to be drawn upon to aid qualified students in the upper three years who are in the upper quarter of their class and who maintain a B or higher grade average. It is understood that the students have received or are eligible to receive assistance in an amount at least equal to the grant provided by the foundation from other University sources in payment of required college expenses. The use of the grant is restricted to the payment of tuition or other required college fees. The recipients are identified as "Scholars of the American Foundation for Pharmaceutical Education."

Boston Association of Retail Druggists Romulus Dinicola Scholarship *College of Pharmacy and Allied Health Professions* This scholarship was established in 1984 to honor Romulus Dinicola and recognize his contributions to pharmacy upon his retirement from his long association with the Massachusetts State Board of Pharmacy. Preference is given to a student majoring in pharmacy who is entering his or her senior year. Selection is based on personal qualifications, need, and scholastic achievement. The initial award of \$200 was made in 1984.

Boston Paper Trades Association, Inc., Scholarship *College of Business Administration* Established in 1966 by the Boston Paper Trades Association, Inc., this is an annual scholarship awarded to a junior or senior who has demonstrated, by cooperative work achievement and extracurricular activities, an interest and potential in the field of sales. The recipient must be of high character, have a good academic record, and be able to demonstrate financial need.

Boston Society of Civil Engineers Scholarship in Memory of Desmond FitzGerald *College of Engineering—Civil Engineering* In 1931, the Boston Society of Civil Engineers established a scholarship in memory of Desmond FitzGerald, a former president of the Society and eminent hydraulic engineer with a distinguished record of service. It has been awarded annually since 1931 to an outstanding Northeastern University senior or junior student in the Department of Civil Engineering of the College of Engineering. The presentation is made by the president of the Boston Society of Civil Engineers at the Society's annual meeting in the spring.

Burroughs Wellcome Scholarship and Award Fund *College of Pharmacy and Allied Health Professions* This endowed fund was established by the Burroughs Wellcome Pharmacy Education Program to assist deserving pharmacy students in the completion of their education. Recipients are selected on the basis of need and academic promise.

William M. Cavanaugh Memorial Scholarship *All Colleges* This award, established by the members of the Publicity Club of Boston, is open to men and women of the junior and senior classes who demonstrate talent in the field of communications. The scholarship of \$100 bears the name of the second president of the Publicity Club (1950–1951), who was an able and successful newspaperman.

Civil Engineering Department Award *College of Engineering—Civil Engineering* The Civil Engineering Department Award was established by members of that department to recognize achievement and give financial assistance to a student who has selected a major in the field of civil engineering. This award, in the amount of \$100, is financed by gifts from members of the Civil Engineering Department and is awarded to the recipient at the beginning of the sophomore year.

Connecticut Alumni Rudolf O. Oberg Scholarships *All Colleges* Each year the Connecticut Alumni Club awards scholarships to students from Connecticut who have achieved a high academic average in their freshman year and have demonstrated financial need. The scholarships are to be used toward the tuition expense of the sophomore year. These scholarships were established in 1958 to promote Northeastern University among the preparatory schools of Connecticut and, in 1971, were named to honor Rudolf O. Oberg, the former director of alumni relations.

Consumer Value Stores Scholarships *College of Pharmacy and Allied Health Professions* Established in 1977, these two scholarship awards of \$750 are granted to fourth- or fifth-year pharmacy students. Recipients must demonstrate interest in community pharmacy, financial need, and involvement in student activities. Special consideration is given to students working for CVS who meet these criteria.

Jack Eckerd Corporation Scholarship *College of Pharmacy and Allied Health Professions* This \$1,000 award is given to a junior or senior student enrolled in the pharmacy curriculum. Preference is given to children of employees of the Jack Eckerd Corporation or to a person who has been employed or will be employed by the corporation.

Electrical Manufacturers Representatives Club of New England, Inc., Scholarship *Electrical Engineering* Established in 1958, this scholarship of \$475 is granted to a student or students majoring in electrical engineering, without regard to race, creed, or color. To qualify, students must have real financial need and excellent scholastic standing.

Frissora Family Scholarship Award *College of Engineering (science majors)* This award was established by the Frissora family in 1972. Awards are made to first-year students entering Northeastern University on the basis of their high school scholastic record and financial need. Preference is given to students of Italian-American extraction who are pursuing an education in a technically oriented curriculum such as engineering, science, mathematics, pre-medicine, or nursing.

Application for this scholarship award must be made through the Grand Lodge of Massachusetts, Order of Sons of Italy in America, 126 Cambridge Street, Boston, Massachusetts 02114. Students selected receive a grant of \$300 per year for four years. Funds are paid directly to Northeastern University.

LaVerdiere's Super Drug Stores Scholarships *College of Pharmacy and Allied Health Professions* Established in 1976, these two \$500 awards are offered to students who have completed two or more full years in the pharmacy curriculum, who are graduates of either a Maine or a New Hampshire high school, and who are deserving of financial assistance.

McKesson & Robbins, Inc., Award *College of Pharmacy and Allied Health Professions* This plaque, given annually by McKesson & Robbins, Inc., is awarded to a pharmacy major. The award recipient is determined by the College of Pharmacy Scholarship Committee.

Massachusetts State Pharmaceutical Association Award *College of Pharmacy and Allied Health Professions* This scholarship of \$200, established by the Massachusetts State Pharmaceutical Association, is awarded annually. The recipient must be a resident of Massachusetts.

National Association of Chain Drug Stores (NACDS) Education Foundation Scholarship *Pharmacy* This scholarship was established in 1985 to support undergraduate pharmacy education and encourage talented students to pursue careers in community pharmacy practice. Preference is given to pharmacy students in the second or third professional year of study and those who have expressed interest in the community practice of pharmacy.

New England Paper Merchants, Inc., Scholarship *All Colleges* Established in 1959 by the New England Paper Merchants Association, Inc., this is an annual scholarship awarded to a junior or senior who has demonstrated by cooperative work achievement and extracurricular activities an interest and potential in the field of sales. The recipient must be of high character, be able to demonstrate financial need, and have a good academic record.

Norfolk County Pharmaceutical Association Scholarship *College of Pharmacy and Allied Health Professions* This scholarship of \$50 is awarded annually to a student who meets the requirements both financially and scholastically and is a resident of one of the member towns covered by the Norfolk County Pharmaceutical Association (Norwood, Dedham, Canton, Walpole, Millis, Needham, Westwood, and Islington, in Massachusetts).

Charles F. Haley Phi Kappa Phi Scholarship *All Colleges* Established in 1982 by the University's Chapter of Phi Kappa Phi, the national interdisciplinary honor society, the scholarship is available to a student transferring from Roxbury Community College. The nomination is made by the president of Roxbury Community College in accordance with criteria established by the University's chapter.

Revco Foundation *College of Pharmacy and Allied Health Professions* Established in 1985, this \$500 donation to the College of Pharmacy Scholarship Fund is used to aid a pharmacy student deserving of financial assistance.

Rite Aid Corporation Scholarships *College of Pharmacy and Allied Health Professions* The purpose of this award, established in 1977, is to assist senior pharmacy students in completing their training in pharmacy. The students should demonstrate financial need, personal qualifications, and good academic records.

Ernest L. Spencer Scholarship Award *College of Engineering—Civil Engineering* Established in 1975 by the family and friends of Ernest L. Spencer as a memorial, this award is administered by Chi Epsilon, honor society for civil engineers. Professor Spencer, chairman of the Civil Engineering Department from 1963 until his death in 1975, was a member of the Northeastern University faculty for thirty-six years. At present, income from the endowment provides an annual award of \$500. Nominees are selected from the senior class of civil engineering students by the department scholarship committee. Criteria on which the award is based include high academic achievement, active participation in student affairs, and evidence of superior professional promise as demonstrated by high evaluations on cooperative work assignments.

Springfield Druggists' Association Scholarship *College of Pharmacy and Allied Health Professions* A scholarship of \$100 is offered by the Springfield Druggists' Association, to be awarded to a sophomore or junior who maintains the highest average in the Department of Pharmacy and who is worthy and in need of financial assistance. The Springfield Druggists' Association Scholarship Fund was established in 1956.

Honor Societies and Awards

Honor Societies

The University encourages the achievement of excellence in scholarship by making monetary awards and chartering honor societies in the various academic disciplines. The following honor societies are chartered in the colleges:

The Academy College of Arts and Sciences

Alpha Kappa Delta College of Arts and Sciences, Department of Sociology/Anthropology

Alpha Phi Sigma College of Criminal Justice

Alpha Pi Mu College of Engineering, Department of Industrial Engineering and Information Systems

Beta Alpha Psi College of Business Administration, accounting concentration

Beta Gamma Sigma College of Business Administration (Massachusetts Delta Chapter)

Boston-Bouvé College of Human Development Professions Honor Society, Boston-Bouvé College of Human Development Professions, all departments

Chi Epsilon College of Engineering, Department of Civil Engineering

Delta Phi Alpha College of Arts and Sciences (national German honor society)

Eta Kappa Nu College of Engineering, Department of Electrical Engineering (Gamma Beta Chapter)

Eta Sigma Gamma Boston-Bouvé College of Human Development Professions, Department of School and Community Health Education

Kappa Delta Pi Boston-Bouvé College of Human Development Professions

National Honor Society of Scabbard and Blade Reserve Officers' Training Corps

Omega Chi Epsilon College of Engineering, Department of Chemical Engineering

Phi Alpha Theta College of Arts and Sciences, Department of History (Northeastern Zeta Tau Chapter)

Phi Kappa Phi National interdisciplinary honor society, all Basic Colleges

Phi Sigma College of Arts and Sciences, Department of Biology

Phi Sigma Iota College of Arts and Sciences, Romance Languages (Iota Zeta Chapter)

Pi Sigma Alpha College of Arts and Sciences, Department of Political Science (Northeastern Delta Gamma Chapter)

Pi Tau Sigma College of Engineering, Department of Mechanical Engineering (Northeastern Tau Chapter)

Rho Chi Society College of Pharmacy and Allied Health Professions (Beta Tau Chapter)

Sigma Delta Chi College of Arts and Sciences, School of Journalism

Sigma Epsilon Rho University College

Sigma Pi Sigma College of Arts and Sciences, Department of Physics

Sigma Theta Tau College of Nursing

Sigma Xi Scientific Research Society of North America

Tau Alpha Pi School of Engineering Technology (national engineering technology honor society)

Tau Beta Pi College of Engineering (Massachusetts Epsilon Chapter)

Election to the college honor societies is based primarily on scholarship, but, before a man or woman is privileged to wear the honor society insignia, there must be evidence of an integrity of character. The societies have memberships consisting of the outstanding men and women in the colleges. Election to an honor society is among the highest honors that can be conferred on an undergraduate.

Awards for Upperclass Students

University awards are determined by scholastic and citizenship achievement. They are presented by appropriate committees headed by the dean of students.

Academy Award *College of Arts and Sciences* The Academy, the honor society of the College of Arts and Sciences, offers an annual award of \$100 to the sophomore in the College of Arts and Sciences who, during the previous year, achieved the highest scholastic record.

William Jefferson Alcott, Jr., Award *All Colleges* This award of \$200 was established in 1934 by members of the faculty and other friends to perpetuate the memory of William Jefferson Alcott, Jr., a brilliant member of the Northeastern Department of Mathematics from 1924 until his death in 1933. The annual award to a senior is made from the income of the fund "for outstanding performance, either in the way of unusual excellence in routine work or in connection with some intellectual activity outside or beyond the requirements of the curriculum."

Alumni Awards for Professional Promise *All Colleges* Established in 1947 by the Alumni Association, these awards are presented annually at an Alumni Association meeting in the spring of the year. The awards are made to the outstanding seniors in each of the Basic Colleges, in the University, and in the School of Engineering Technology who have demonstrated unusual professional promise through their character traits, scholastic achievement, and cooperative work performance.

Beta Gamma Sigma Society Award *College of Business Administration* "The purpose of this society shall be to encourage and reward scholarship and accomplishment among students of business administration, to promote the advancement of education in the art and science of business, and to foster integrity in the conduct of business operators." Election to membership in Beta Gamma Sigma is the highest scholastic honor open to a student in business administration. The Massachusetts Delta Chapter of Beta Gamma Sigma, the national honor society of colleges of business administration, offers an annual scholarship of \$100 to the sophomore in the College of Business Administration who, during the previous year, achieved the highest scholastic record.

Eugene J. Blackman Theatre Scholarship *College of Arts and Sciences* This scholarship fund was established in 1988 by former students, members of The Silver Masque (the student theatre club), friends, and colleagues of Professor Eugene J. Blackman to honor his forty-one years of dedicated service to Northeastern University and its students. Professor Blackman served as a member of the faculty of the Department of English and for many years as chairman of the Department of Drama, Speech, and Music, which later became the Department of Theatre and Dance. Through his efforts, generations of students and members of the Northeastern community received a much greater appreciation for theatre and the performing arts.

The chairman of the Department of Theatre and Dance makes the annual selection for the award of the Eugene J. Blackman Theatre Scholarship. Candidates must show outstanding promise in theatre. (Candidates may include entering freshmen.)

Boston-Bouvé College of Human Development Professions Honor Society Awards *Boston-Bouvé College of Human Development Professions* The society offers an annual award of \$100 to the sophomore in Boston-Bouvé College of Human Development Professions who, during the previous year in the College, achieved the highest scholastic record. Each student voted into the society receives an engraved certificate at a special Honors Assembly.

Class of 1986—Greg Jarvis Memorial Scholarships *All Colleges* This fund was established by the Class of 1986 in memory of Greg Jarvis, a Northeastern alumnus who was a crew member aboard the space shuttle Challenger when it was tragically destroyed in 1986. The scholarship is awarded annually to two students who, in their previous three academic quarters, have displayed leadership qualities in extracurricular activities while maintaining at least a 2.5 quality-point average. It is in this context that the Class of 1986 feels the recipients will reflect the perseverance, integrity, spirit, and pride that Mr. Jarvis exemplified.

Sears B. Condit Honor Awards *All Colleges* These awards were established in 1940 through the generosity of Sears B. Condit. On Honors Day, Sears B. Condit Honor Awards are presented annually to outstanding students in the senior class. Each award carries a stipend as well as a certificate of achievement.

Joseph Arthur Coolidge Achievement Awards *College of Arts and Sciences—Physical Sciences* Established in 1977 with funds provided by the will of Joseph A. Coolidge, a distinguished member of the Northeastern University faculty from 1911 to 1954 and chairman of the Department of Physics from 1912 to 1935, three awards of \$500 each are granted annually to the outstanding sophomore, middler, and junior physical sciences students. These awards are based primarily on distinguished academic achievement, with additional consideration given to soundness of character, participation in extracurricular activities on and off campus, and qualities of leadership. Preference is given to students majoring in physics, mathematics, or other physical sciences.

Cooperative Education Awards *All Colleges* These awards are presented to seniors in the Basic Colleges in recognition of outstanding performance in the Cooperative Education Program, through which they have personified the objectives and ideals of the University. The awards are presented at the Annual Awards Luncheon.

Richard Cardinal Cushing Scholarship *All Colleges* The Richard Cardinal Cushing Scholarship was established in 1978 through the generosity of the Massachusetts Committee of Catholics, Protestants, and Jews. The income from the scholarship's endowment is awarded annually to a Catholic, a Protestant, and a Jewish student who embody the principles of equality and justice and who, through their work on campus, have become positive forces for religious understanding.

Director's Award *All Colleges* The Director's Award of \$100 is made annually by the director of the African-American Institute to the individual judged by the director to be the most outstanding black senior. The award is based on involvement in African-American Institute programs and scholarship as well as interaction with the community at large. The award is presented at the Awards and Unity Banquet in June.

Alfred J. Ferretti Award *College of Engineering—Mechanical Engineering* Tau Kappa Chapter of Pi Tau Sigma, the mechanical engineering national honor fraternity, sponsors an annual award to the sophomore mechanical engineering student at Northeastern having the highest scholastic standing. The award is named in honor of Professor Ferretti, who retired June 30, 1961, after forty-three years of service to the University.

Alfred J. and Laura M. Ferretti Scholarship *College of Engineering—Mechanical Engineering* This scholarship was established in 1978 by Professor Alfred J. Ferretti, who retired in 1961 after forty-three years of service to Northeastern University. It honors the memory of Mrs. Ferretti and is to benefit worthy undergraduate students who are majoring in mechanical engineering. Recipients should demonstrate high academic achievement by maintaining a minimum average of 3.0 and should be of sound character.

Luis de Flores Endowment Fund *All Colleges* This fund was established in 1964 to provide yearly awards to students in recognition of superior ingenuity, irrespective of general academic standing.

Clara and Joseph F. Ford Awards *All Colleges* The Ford Awards are made to students who have shown a democratic and tolerant spirit and who are well disposed toward people of all creeds and races. They are chosen from the senior class and judged on the basis of their contributions

through participation or leadership and their extracurricular organizations. Students must have demonstrated by their actions that they are particularly tolerant and willing to work with and for other people.

Lillian Gilbreth Award *College of Engineering—Industrial Engineering and Information Systems* A cash award is presented at the annual Engineering Honors Banquet to the outstanding senior in the Department of Industrial Engineering and Information Systems. Named in honor of the first woman industrial engineer, the award was established in 1986 by Carolyn M. Jack, a 1984 graduate, to recognize academic excellence and service to the University and the community. The recipient is selected by the department chairman and the faculty adviser and president of the Alpha Pi Mu honor society.

Harold D. Hodgkinson Achievement Awards *All Colleges* Established in 1954, the Harold D. Hodgkinson Achievement Awards of \$1,000 each are granted annually to two senior students. The winners of the awards are known as the Hodgkinson Scholars for the year in which they are chosen. The award is based primarily upon distinguished scholastic achievement, with due consideration of character, personality, qualities of leadership, cooperative work experience, military record (if any), and service in voluntary organizations and activities. Student leadership accomplishments and professional potential are evaluated in connection with these criteria. The Hodgkinson Scholars are chosen by a committee of administrative members of the faculty. An appropriate certificate is presented to each recipient as a permanent record of his or her selection.

Kappa Delta Pi Award *Boston-Bouvé College of Human Development Professions* Kappa Delta Pi honor society offers an annual award of \$100 to the sophomore who, during the previous year, achieved the highest scholastic record.

Robert D. Klein Memorial Scholarship *College of Arts and Sciences* This scholarship was established in 1981 through the generosity of family, friends, and colleagues of Professor Klein, who joined the Northeastern University faculty in 1957, served as acting chairman of the Department of Mathematics between 1969 and 1970 and, from 1977 until his death in 1978, was a professor of mathematics. The scholarship is awarded annually to a first-year student enrolled in the College of Arts and Sciences who demonstrates consistent effort and academic achievement in remedial mathematics, the educational program to which Professor Klein contributed so significantly.

Joseph C. Lawler Memorial Scholarship *College of Engineering—Civil Engineering* This scholarship was established in 1982 by family, friends, and colleagues in memory of Joseph C. Lawler, an alumnus of the College of Engineering, Class of 1943, and a recipient of a University honorary degree in 1972. Mr. Lawler was a member of Northeastern's Corporation and Board of Trustees. He was chairman and chief executive officer of Camp Dresser & McKee, Inc., the firm where he began his employment as a co-op student of Northeastern. A \$2,000 award will be made annually to an upperclass (middles, juniors, or seniors) full-time undergraduate civil engineering day student who demonstrates exceptional professional promise. Criteria include academic performance, cooperative employer recommendations, demonstrated leadership abilities, and/or community service activities.

Lilly Achievement Award *College of Pharmacy and Allied Health Professions* The Lilly Achievement Award is given to a graduating senior for superior scholastic and professional achievement. Leadership qualities, professional attitudes, and academic performance will be considered in the selection of the individual for this award.

McKesson & Robbins, Inc., Scholarship *College of Pharmacy and Allied Health Professions* This scholarship of \$200, given annually by McKesson & Robbins, Inc., is awarded to a worthy student in financial need.

Susan L. Orchard Memorial Fund *All Colleges* In 1978, the Susan L. Orchard Memorial Fund was established at Northeastern in memory of Susan L. Orchard, a former University student. Reflecting Susan's interest in improving the quality of life and opportunities for women, the annual income of this fund is awarded to mothers pursuing their studies at Northeastern who require financial assistance in order for their children to make use of the University's day-care center. Recipients are selected by the center's director and advisory committee.

Phi Sigma Society Award *College of Arts and Sciences* Phi Sigma, honor society in the Department of Biology, offers an annual award of \$50 to the junior or senior majoring in biology or a related science who demonstrates the greatest research potential. To qualify for the award, the student must be a member of Phi Sigma.

Roland Guyer Porter Memorial Fund *College of Engineering—Electrical Engineering* This fund was established in 1953 by colleagues and friends of the late Professor Roland G. Porter, for many years the head of the Department of Electrical Engineering. Interest from the fund provides an annual award to a student in the Department of Electrical Engineering who best exemplifies the qualities of mind and character that Professor Porter did so much to develop in his lifetime.

President's Awards *All Colleges* On the annual Honors Day, six awards of \$500 each, known as the President's Awards, are presented to the students with the highest records in both divisions of the sophomore, middler, and junior classes.

William Rand Award *College of Engineering* The Massachusetts Epsilon Chapter of Tau Beta Pi annually offers an award to the outstanding middler in the College of Engineering. The award is based upon outstanding scholarship, breadth of interest, and contribution to the University. All middleers with a 3.5 average or above are eligible; the winner is chosen after careful screening and interviews with members of the chapter.

ROTC Awards *Department of Military Science—ROTC* Awards totaling \$1,000 are available to ROTC cadets each year. The University offers ten \$50 awards annually—four to sophomores, four to middleers, and two to juniors.

Scabbard and Blade (the cadet officers' honor society) offers one award annually to middleers. The Pershing Rifles (the basic-course honor society) offers a \$50 award to a sophomore Pershing Rifles cadet.

Academic Achievement Awards are won by each cadet in the top ten percent of ROTC classes. This award, a wreath, is worn above the right breast pocket of the uniform during the year immediately following the year it is earned. Leadership Achievement Awards, consisting of letters of commendation, are awarded to each cadet in the top ten percent in leadership potential.

Many medals and trophies are also awarded by other organizations to ROTC cadets for achievements in diverse fields.

Nguzo Saba Award *Office of Minority Students Affairs* Two Nguzo Saba Awards are presented each year by the African-American Institute to the black male and female who have proved themselves of invaluable service to the black community of Northeastern University and Boston. The award is in the amount of \$100 and is presented at the Awards and Unity Banquet.

Sigma Theta *College of Nursing* Sigma Theta, the honor society in the College of Nursing, annually offers an award of \$100 to the sophomore in the College of Nursing who, during the previous year, achieved the highest scholastic record.

Professor Joseph Spear Fund for Excellence in Student Activities *All Colleges* This fund was established by the College of Engineering Class of 1923 in recognition of Professor Spear, class adviser and mentor. It was through Professor Spear's devotion and concern for the well-being of the students that he developed and promoted student activities at Northeastern University. Professor Spear has been referred to as the "father of student activities." The purpose of this fund is to provide a source of income that can be awarded annually to juniors and seniors who have made outstanding contributions to student activities.

Max Starr Award *College of Business Administration* The Max Starr Award in Public Accounting was established in 1968 by the Max Starr Foundation to recognize every other year an outstanding member of the junior class in the College of Business Administration preparing for a career in public accounting. The recipient is chosen on the basis of both academic and cooperative work records as well as personal qualities. The student receives an award of \$250.

Dr. Ruth E. Sullivan Memorial Scholarship Fund *College of Arts and Sciences* This fund was established at Northeastern University in 1976 through the generosity of family, friends, and colleagues of Dr. Sullivan, who was a member of the Department of English from 1968 until her death in 1976. One scholarship is awarded annually to an undergraduate senior who demonstrates academic achievement and excellence in interdisciplinary studies in the liberal arts, such as literature and psychology, the fields to which Dr. Sullivan contributed so significantly.

Tau Beta Pi Award *College of Engineering* Massachusetts Epsilon Chapter of Tau Beta Pi Association, the national honor society in engineering, annually offers a scholarship of \$100 to the sophomore in the College of Engineering who, during the previous year, made the highest scholastic record.

Gifts and Bequests to Northeastern University

Northeastern University welcomes gifts and bequests to further its educational purposes. It is recommended that those contemplating gifts or bequests confer with the Office of Development regarding the needs of the University.

A member of the Northeastern University development staff will be happy to consult with those considering a gift or bequest. Planned gifts to the University can often be combined with personal financial goals to produce maximum financial security as well as significant tax savings for an individual or family.

The legal name of the University is "Northeastern University." In making a gift or bequest, it is recommended the following wording be used: "Northeastern University, an educational institution incorporated under the laws of Massachusetts and located in Boston, Massachusetts."

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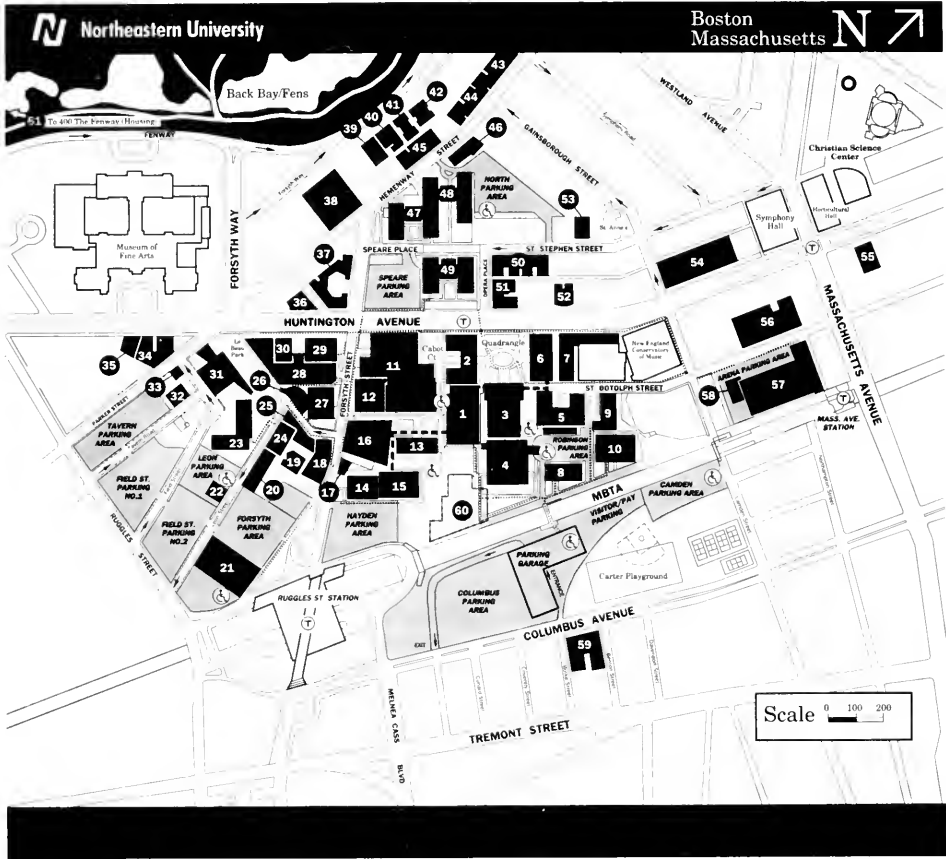
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Boston Access Map



University Map



Key

Academic, Residential,
and Service Buildings

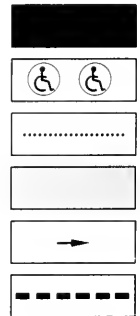
Handicap Parking

Handicap Routes

Parking Areas

Street Direction

Underground Tunnel



Maps are provided by the Visitor Information Center, 115 Richards Hall, 617-437-2736. Some buildings on this map are used but not owned by Northeastern University. 7/89

Academic and Service Buildings

22	African-American Institute (AF)	54	Huntington Plaza
12	Barletta Natatorium (BN)		(271 Huntington Avenue) (HN)
19	Boiler Plant	10	Hurtig Hall (HT)
7	316 Huntington Ave.	26	Kariotis Hall (KA)
	(Northeastern at the YMCA)	41	Kerr Hall (Faculty Center) (KH)
11	Cabot Physical Education Building (CB)	29	Knowles Center (Gryzmish Hall) (KG)
39	Cahners Hall (CA)	29	Knowles Center (Volpe Hall) (KV)
28	Cargill Hall (CG)	25	Lake Hall (LA)
13	Churchill Hall (CH)	60	Library Resource Center,
59	Columbus Place		under construction
	(716 Columbus Avenue) (CP)	57	Matthews Arena (MA)
56	Cotting School (CT)	58	Matthews Arena Annex (MX)
9	Cullinane Hall (CN)	20	Meserve Hall (ME)
40	Cushing Hall (CU)	5	Mugar Life Science Building
14	Dana Research Center (DA)		(Peabody Health Professions Center) (MU)
27	Dockser Hall (DK)	18	Nightingale Hall (NI)
6	Dodge Library (DG)	31	Parker Building (PA)
3	Ell Student Building (Auditorium) (EL)	5	Peabody Center
4	Ell Student Center (Student Lounge) (EC)	2	Richards Hall (RI)
16	Forsyth Building (FR)	8	Robinson Hall (RB)
17	Forsyth Building Annex (FA)	21	Ruggles Building (11 Leon Street) (RU)
38	Forsyth Dental Building (FE)	15	Snell Engineering Center (SN)
1	Hayden Hall (HA)	50	122 St. Stephen Street (SS)
33	Hillel-Frager (HF)	30	Stearns Center (ST)
24	Holmes Hall (HO)	32	26 Tavern Road (TA)
55	236 Huntington Avenue (HU)		

Residence Buildings

34	Burstein Hall	35	Rubenstein Hall
51	337 Huntington Ave.	44	Smith Hall
43	115-119 Hemenway St.	49	Speare Hall
46	142-148 Hemenway Street	48	Stetson East
45	153/157-163 Hemenway St.	47	Stetson West
36	407 Huntington Ave.	50	106/110/116/122 St. Stephen St.
52	319 Huntington Ave.	23	West Apartments
41	Kerr Hall	37	White Hall
53	Light Hall	7	316 Huntington Ave.
42	Melvin Hall		(Northeastern at the YMCA)
		61	400 The Fenway

Northeastern University's Mission

Northeastern University's mission, as a large urban university founded on the cooperative model of education, is to provide individuals with the opportunity for upward mobility through excellence in education. The University achieves its mission through curricula that value equally knowledge for its own sake, knowledge as a means to success in the workplace, and knowledge as a cornerstone of personal achievement and satisfaction.

Achieving Northeastern University's mission requires excellence in teaching, and teaching remains the central activity of Northeastern's faculty. By offering undergraduate and graduate programs that are rigorous, relevant, and rewarding, the University provides a solid structure for educational excellence. Northeastern University is also committed to the search for knowledge through the scholarly and artistic undertakings of its faculty and students.

A central mandate of Northeastern University is to offer students the opportunity to apply directly lessons of the classroom and laboratory to the workplace through cooperative education. For three quarters of a century, cooperative education has been the keystone of Northeastern's uniqueness. As an increasing percentage of the nation's population enters the workforce and new technologies continue to change the nature of work, the University has rededicated itself to helping the cooperative plan keep place with those changes.

Northeastern University is committed to serving the educational needs of a diverse student population in an amenable physical environment. The University believes that its mission can be achieved only if the student body is not limited by economic status, cultural or racial background, geographic origin, sex, or age. Northeastern has a long history of serving the educational needs of the nontraditional student, providing degree and nondegree programs for people whose circumstances prevent them from following the standard college regimen.

Looking beyond the confines of the campus, Northeastern University is determined to maintain and strengthen its reputation as a friend to the City of Boston and a partner of the Commonwealth of Massachusetts. The University's obligation to serve the community of which it is an integral part is fulfilled primarily through the educational enterprise. Through its numerous outreach programs, the University has made striking contributions to the community in the applied social sciences, in high technology, and in the arts. Northeastern University will continue to contribute in these and other ways to the region's overall quality of life and to its economic vitality.

Accreditation Statement

Northeastern University is accredited by the New England Association of Schools and Colleges, Inc., a nongovernmental, nationally recognized organization whose affiliated institutions include elementary schools through collegiate institutions offering postgraduate instruction.

Accreditation of an institution by the New England Association indicates that it meets or exceeds criteria for the assessment of institutional quality periodically applied through a peer group review process. An accredited school or college is one which has available the necessary resources to achieve its stated purposes through appropriate educational programs, is substantially doing so, and gives reasonable evidence that it will continue to do so in the foreseeable future. Institutional integrity is also addressed through accreditation.

Accreditation by the New England Association is not partial but applies to the institution as a whole. As such, it is not a guarantee of the quality of every course or program offered, or the competence of individual graduates. Rather, it provides reasonable assurance about the quality of opportunities available to students who attend the institution.

Inquiries regarding the status of an institution's accreditation by the New England Association should be directed to the administrative staff of the school or college. Individuals may also contact the New England Association of Schools and Colleges, The Sanborn House, 15 High Street, Winchester, Massachusetts 01890, 617-729-6762.

Delivery of Services

The University assumes no liability, and hereby expressly negates the same, for failure to provide or delay in providing educational or related services or facilities or for any other failure or delay in performance arising out of or due to causes beyond the reasonable control of the University, which causes include, without limitation, power failure, fire, strikes by University employees or others, damage by the elements and acts of public authorities. The University will, however, exert reasonable efforts, when in its judgment it is appropriate to do so, to provide comparable or substantially equivalent services, facilities or performance, but its inability or failure to do so shall not subject it to liability.

The Northeastern University *Bulletin* contains current information regarding the University calendar, admissions, degree requirements, fees, and regulations, and such information is not intended to be and should not be relied upon as a statement of the University's contractual undertakings.

Northeastern University reserves the right in its sole judgment to promulgate and change rules and regulations and to make changes of any nature in its program, calendar, admissions policies, procedures and standards, degree requirements, fees, and academic schedule whenever it is deemed necessary or desirable, including, without limitation, changes in course content, the rescheduling of classes, canceling of scheduled classes and other academic activities

and requiring or affording alternatives for scheduled classes or other academic activities, in any such case giving such notice as is reasonably practicable under the circumstances.

Northeastern University will do its best to make available to you the finest education, the most stimulating atmosphere, and the most congenial conditions it can provide. But the quality and the rate of progress of your academic career is in large measure dependent upon your own abilities, commitment, and effort. This is equally true with respect to professional advancement upon completion of the degree or program in which you are enrolled. The University cannot guarantee that you will obtain or succeed at any particular job; that will depend upon your own skills, achievement, presentation, and other factors such as market conditions at that time. Similarly, in many professions and occupations there are increasing requirements imposed by federal and state statutes and regulatory agencies for certification or entry into a particular field. These may change during the period of time when you are at Northeastern and they may vary from state to state and from country to country. While the University stands ready to help you find out about these requirements and changes, it is your responsibility to initiate the inquiry because the University has no other way of knowing what your expectations and understandings are.

In brief, the University is there to offer you educational opportunities and choices and to assist you in finding the direction in which you want to steer your educational experience. But you are a partner in this venture with an obligation and responsibility to yourself.

Tuition and Regulations

Tuition rates, all fees, rules and regulations, courses, and course content are subject to revision by the President and the Board of Trustees at any time.

Office of Services for the Handicapped

The Office of Services for the Handicapped (OSH) provides a variety of support services and general assistance to all of Northeastern's disabled students and employees.

Northeastern's efforts to comply with the Title IX Education Amendments of 1972 and Section 504 of The Rehabilitation Act of 1973 are coordinated by the Dean and Director of Affirmative Action.

Antidiscrimination Policy

Northeastern University is committed to a policy of equal opportunity for all students, employees, and applicants for employment without regard to race, color, religion, sex, sexual preference, age, national origin, handicap, marital, or veteran status. The University prohibits discrimination in all matters involving admission, registration, and all official relationships with students, including evaluation of academic performance.

Equal Opportunity Employment Policy

Northeastern University is an equal opportunity employer. It is institutional policy that there shall be no discrimination against any employee or applicant for employment because of race, color, religion, sex, age, sexual preference, national origin, or handicap or veteran status.

Northeastern University also prohibits discrimination against any employee regarding upgrading, demotion or transfer, layoff or termination, rates of pay or other forms of compensation, and selection for training. In addition, the University adheres to Affirmative Action guidelines in all recruitment endeavors.

Further, Northeastern will not condone any form of sexual harassment, which is defined as the use of sexual advances, requests for favors, and other verbal or physical conduct of a sexual nature, as an explicit or implicit condition of employment, as the basis for employment decisions, or to interfere with an individual's work performance by creating an intimidating, hostile, or offensive work environment.

Inquiries concerning our equal opportunity policies may be referred to the University Title IX Coordinator/Compliance Officer for Section 504 of The Rehabilitation Act of 1973, Affirmative Action Office, 175 Richards Hall, 617-437-2133.

Family Educational Rights and Privacy Act

In accordance with the Family Educational Rights and Privacy Act of 1974, Northeastern University permits its students to inspect their records wherever appropriate and to challenge specific parts of them when they feel it necessary to do so. Specific details of the law as it applies to Northeastern are printed in the *Student Handbook* and are distributed annually at registrations of University College and the graduate schools.

Emergency Closing of the University

Northeastern University has made arrangements to notify students, faculty, and staff by radio when it becomes necessary to cancel classes because of extremely inclement weather. AM radio stations WBZ (1030), WEEI (590), WHDH (850), WRKO (680), and FM stations WBCN (104.1), and WROR (98.5) are authorized to announce the University's decision to close. Since instructional television courses originate from live or broadcast facilities at the University, neither the classes nor the courier service operate when the University is closed.

For further information, please write or telephone:

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Northeastern University
360 Huntington Avenue
Boston, MA 02115
617-437-2200

Credits

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